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Food Technology Abstracts

National Information Centre
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Food Technology Abstracts

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FOR XEROX COPIES OF THE PERIODICAL ARTICLES INCLUDED IN THIS PUBLICATION AND ALSO FOR TRANSLATION SERVICE (GERMAN, FRENCH, ITALIAN AND SPANISH),

PLEASE CONTACT:

Head, Food Science & Technology Information Service (FOSTIS), CFTRI, Mysore - 570 013, India.

1542 GRUNDKE (G). The significance of standards for improving food quality. Part I. *Ernahrungsforschung*. 24(2); 1979; 45-7 (German)

1543 McPHERSON (AT). Food for India-abundant and independent of weather. *Indian J. Nutr. Diet.* 17(10); 1980; 387-91
Aspects covered include: the five myths which prevent synthetic production of food, initiating a new source of food, its planning; endorsement by the scientific community; implementation of the programme; and finding the costs and benefits. BSN

1544 ROLLIN (JL), MATHEWS (ME) and LUND (DB). Cook/chill food service systems. *J. Am. Diet. Assoc.* 75(4); 1979; 440-5
Discusses a model for predicting cooling time and food masses, which is required for use in increasingly popular cook/chill food service systems. BSN

1545 VENU (S). Transfer of technology and LDCs. *East. Econ.* 75(12); 1980; 676-8

1546 WIENHAUS (O). Use of raw materials from forestry in the food industry and food trade. *Ernahrungsforschung*. 24(2); 1979; 55-9 (German)
The author has described food products that can be obtained (i) by gathering or hunting - mushrooms, fruits and berries, wild game; (ii) by chemical conversion of forest raw materials - hydrolysis of polysaccharides to obtain glugose, xylose and arabino galactan; (iii) by conversion of grass and weeds into animal food; and (iv) by fermentation and conservation - e.g. production of smoking agents or liquid smokes. KMD

1547 WORSLEY (A). Thought for food: Investigations of cognitive aspects of food. *Ecol. Food Nutr.* 9(2); 1980; 65-80
32 foods were classified based on Personal Construct Theory and Repertory Grid Techniques. They were classified into five food group schemes, fruits and vegetables, dairy foods, fats and oils, cereals. In the second study, baked beans, blackcurrants, boiled cabbage, dates, mushrooms, fresh oranges, boiled potatoes were taken for further examination. Categories of constructs were elicited by nutrition and secondary students cooking tastiness, nutritional, non fattening, fattening foods dimensions were studied. BSN

1548 YANG (CI-P) and FOX (HM). Food habit changes of Chinese persons living in Lincoln, Nebraska. *J. Am. Diet. Assoc.* 75(4); 1979; 420-40

FOOD PROCESSING AND PACKAGING

1549 KALRA (SK) and BHARDWAJ (KC). Use of simple solar dehydrator for drying fruit and vegetable products. *J. Food Sci. Technol. (India)* 18(1); 1981; 23-6
Two models of solar dehydrators were constructed with the functions of direct and indirect dryers. The model I and model II attained 10-20 C and 20-25 C respectively, higher temperature than the open atmosphere. Samples of mango slices, mango leather, green peas, okra and three potato products were satisfactorily dehydrated. Model II reduced the moisture to 6% in 7 hour and model I to 7% in over 8 hour compared to about 9 hour needed in open atmosphere for getting 8% moisture. The products were considered qualitatively superior to the open sundried products. The solar dehydrators for which the designs are given, are simple to fabricate and are well suited to rural conditions and

small scale food processing industries. KAR

1550 FEHSENFELD (Von B), KNUTH (M) and STEIN (W). Fundamentals of processing and mathematical modelling of percolation - extraction. *Fette Seifen Anstrichm.* 81(12); 1979; 469-73 (German)

The five transport processes occurring in solid-liquid extraction are outlined, and a few important properties of the material to be extracted, such as degree of rupture, particle size and porosity are discussed. A consideration of the most important factors in percolation extraction, i.e. miscella transport in the bulk of the material to be extracted and miscella transport in the extraction system has been made with the aid of a mathematical simulation model. A practical example shows the agreement with the mathematical model. AA

1551 LLOYD (AK). Microprocessors in food processing. *Inst. Food Sci. Technol (UK) Proceed.* 13(3); 1980; 177-82

Application of minicomputer in food processing including the design considerations, plant operation, fault diagnosis and maintenance have been covered. KAR

1552 PLUMMER (RW). A brief investigation into the cook-chill food preparation process at the Brighton centre. *Environ. Health* 88(6); 1980; 125-6

1553 SHARMA (UP), PAUL (TM) and ZARIWALA (IT). Recycling of waste material, their chemical composition and utilization. *Indian J. Anim. Sci.* 50(5); 1980; 407-10

1554 SUSS (P). About the designing of food packages. *Lebensmittel-Industrie.* 27(3); 1980; 105-6 (German)

The general functions of packaging are : protection, which is necessary for preserving foods; rationalisation, which comprises the processes of production, packing, the movement of goods and transport and information and communication functions which represents the field of design of packages. Some hints for attaining a higher level of the packaging design have been given. KMD

1555 VAZIRALLI (YA). Trends of food packaging in India. *Glass Udyog.* 9(4); 1980; 21-3

FOOD ENGINEERING AND EQUIPMENT

1556 ANON. Flow sheet review: A.O.M. technical committee project. *Indian Miller.* 11(4); 1981; 31-5

A report of a questionnaire survey conducted by the Association of Operative Millers together with typical flow sheets for a 5000 cwt. per day mill. MVG

1557 FAIMAN (D), GORDON (JM) and GOVAER (D). Optimization of a solar water heating system for a Negev Kibbutz. *Isr. J. Technol.* 17(1); 1979; 19-28

1558 GROSSMAN (G) and FRUCHTER (E). Development of a spherical reflector tracking absorber solar energy collector. *Isr. J. Technol.* 17(1); 1979; 5-11

1559 KOZIOL (K), BRONIARZ (L) and NOWICKA (T). Influence of surface roughness on liquid-gas material exchange. *Chemie-Ingenieur-Technik.* 51(9); 1979; 897 (German)

1560 MANDELKORN (J) and YEKUTIELI (G). Technology and performance of a high concentration solar cell power supply. *Isr. J. Technol.* 17(1); 1979; 12-8

1561 SCHNEIDER (A). Rational utilization and supply of thermal energy in the chemical industry. *Chemie-Ingenieur-Technik.* 51(9); 1979; 833-9 (German)

1562 SLATER (L). Coming revolution in 'enzyme engineering'. *Food Eng. Int.* 5(5); 1980; 38-40

1563 STEELE (DJ). Microprocessors and their application to the control of a horizontal batch retort. *Inst. Food Sci. Technol (UK) Proceed.* 13(3); 1980; 183-93

1564 TAEYMANS (DA). Reliable methods for calculation of average film thickness in a vertical thin-film evaporator. *Chemie-Ingenieur-Technik.* 51(9); 1979; 905

1565 WHITMAN (WE). Application of microcomputers in food factories. *Inst. Food Sci. Technol (UK) Proceed.* 13(3); 1980; 169-75

1566 WINGFIELD (J). Flour mill control. *Indian Miller.* 11(4); 1981; 11-3
Flour mill control at various points of mill operation for getting products of uniform quality has been outlined. MVG

FOOD CHEMISTRY AND ANALYSIS

1567 ERHARDT (V), KRAUSE (M), SEPPELT (B) and BOCK (W). Optimization of two or more objectives in application of statistical test plans for solving problems in the field of food chemistry and food technology. *Lebensmittel-Industrie.* 27(3); 1980; 107-10 (German)
Using the evaluation of low methoxyl pectin gels as an example, a mathematical method is described which makes it possible to optimize a product in respect of several - at least two - functional properties (objectives) simultaneously. The data from a computer programme of the BESMG are discussed and compared with results of control tests. The method, described in this article can be transferred to other tasks in the field of food chemistry and food technology. AA

1568 EUSEBIUS (LCT), GHOSE (AK), MAHAN (A) and DEY (AK). Thiosulphate as a complexing agent in the separation of cations by anion-exchange chromatography. *Analyst.* 105(1246); 1980; 52-9

1569 GARCIA-MORENO (C), NOGALES-ALARCON (A), GOMEZ-CERRO (A) and MARINE-FONT (A). Spectrofluorometric determination and thin layer chromatographic identification of serotonin in foods. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 19-21
A method is described for determining serotonin in foods, based on alkaline butanol-sand column elution followed by spectrofluorometric and spectrofluorometric determination with thin layer chromatographic confirmation. The method has been applied to fresh bananas, banana-based baby foods, and fresh and canned tomatoes. The average recovery was 91%. The amounts of serontonin found were 10-30 ppm in bananas, 0.1-1.9 ppm in banana-based baby foods, 4.4-5.6 ppm in fresh tomatoes, and 2.8-5.6 ppm in canned tomatoes. AA

1570 HUNT (J). Determination of total sulphur in small amounts of plant material. *Analyst.* 105(1246); 1980; 83-5

1571 LAMPARSKI (LL), LANGHORST (ML), NESTRICK (TJ) and CUTIE (S). Gas liquid chromatographic determination of chlorinated benzenes and phenols in selected biological matrices. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 27-32

The determination of higher chlorinated benzenes and chlorinated phenols at parts per billion or parts per million levels in biological samples is described. The method includes sulfuric acid digestion, silica gel column chromatography, methylation, alumina column chromatography, and detection by electron capture gas chromatography. Recoveries are reported for fish flesh, rabbit tissues, and duck tissues with detection limits of 10-15 ppb (ng/g tissue). AA

FOOD MICROBIOLOGY

1572 SWATI KUNTE and SHASTRI (NV). Studies on extracellular production of pectolytic enzymes by a strain of *Alternaria alternata*. *Indian J. Microbiol.* 20(3); 1980; 211-5

A. *alternata* (Fr) Keissl, isolated from mandarin oranges elaborated more of polygalacturonase (PG), and polymethylgalacturonase (HMG), and less of pectinmethylesterase (PME). Maximum production of PG and PMG was in medium containing pectin and cellulose. Peak levels of PG were obtained after 4 days of incubation at 25 C whereas the corresponding incubation period for PMG was 7 days. Both the enzymes exhibited two pH activity peaks; one in acid and the other in basic pH range. Increase in the concentration of pectin was found to increase production of enzyme to a certain extent. Initial pH of the medium was also affected the production of these enzyme. BSN

YEAST

1573 ELLIS (EB). The role of baker's yeast in developing countries. *Indian Food Packer.* 34(5); 1980; 16-7

1574 SCHAĎE (J) and PETZOLDT (R). Cell electrophoretic behaviour of yeasts. *Lebensmittel-Industrie.* 27(3); 1980; 121-3 (German)

The article reports on the analysis of the electrophoretic mobility (EPM) of yeasts in the medium of sodium bicarbonate suspension. The results show that there are significant differences in the EPM of various yeasts of the genera *Saccharomyces* and *Candida* and of the phyta of baker's yeast, *Saccharomyces cerevisiae*. These differences can be used as a basis for the identification of yeasts and for the quantitative analysis of single yeasts in blends. However, the applicability of this method in the fermentation industry has to be tested. AA

ALGAE

1575 AHLUWALIA (AS), RAI (RK) and KUMAR (HD). Chromatic adaptation and photo-reversal in blue-green alga *Calothrix clavata* West. *J. Biosci.* 2(1); 1980; 63-8

1576 GUIRY (MD). Commercial exploitation of marine red algal polysaccharides : Progress and prospects. *Trop. Sci.* 21(3); 1979; 183-95

The production of sulphated polysaccharides - known generically agars and carrageenans - is still totally dependent upon the collection of wild, red marine algae (or seaweeds). Techniques to maintain a viable operation have been slow in developing and considerable fluctuations in production are being experienced. The development of techniques for producing strains with better

growth characteristics and high polysaccharide content for mariculture has been very slow, principally because of a lack of detailed knowledge of the biology of these algae. Further studies are needed on the genetics of these algae. KMD

T.D

MUSHROOM

1577 DANG (RL), SINGH (RP) and GUPTA (AK). Button mushrooms : Post-harvest and processing problems. *Indian Food Packer.* 34(5); 1980; 18-24

Aspects covered include : mushroom culture; use of controlled atmosphere and low temperature storage for prolonging shelf life; application of succinic acid-2, 2-dimethyl hydrazide to prevent browning; canning; reduction of shrinkage by soaking and storage; and by vacuum; use of polyphosphate to enhance water holding capacity and improvement of colour. BSN

1578 KUMAR (KR), ZAKIA BANO, LALITHA SUBRAMANIAM and ANANDASWAMY (B). Moisture sorption, storage and sensory quality studies on dehydrated mushrooms. *Indian Food Packer.* 34(5); 1980; 3-8

Moisture sorption, storage and sensory quality studies were carried out on dehydrated mushroom, *Pleurotus flabellatus*, pretreated with (a) potassium metabisulphite (KMS) and (b) KMS treatment plus dipping in citric acid and sugar solutions followed by blanching. The sorption studies conducted at 27 C indicated that the unblanched sample had an initial moisture content of 6.3% (dry wt) and a critical moisture content of 8.5% corresponding to 52% RH. The BET monolayer moisture value at 27 C and 3.9%. The sugar treated sample had initial and critical moisture levels of 4.5% and 10.0% corresponding to relative humidities of 45 % and 64% respectively.

The two types of mushrooms were packed in 50 g lots in 400 gauge high density polyethylene (PE) and paper/PE/foil/PE laminated pouches and stored at normal (27 C with 65% RH) and accelerated (38 C with 90% RH) conditions. The unblanched sample had very poor storage stability and was not evaluated for sensory qualities. The blanched and treated sample at the normal storage conditions indicated a shelf-life upto 3 months when packed in foil laminate and only 1 month when packed in HDPE pouches. The product kept well for 1 month at the accelerated condition, and the foil laminate packed sample was found better than HDPE packed sample. BSN

FOOD ADDITIVES

1579 ANON. Food contact materials. *Br. Food J.* 83(100); 1981; 14-5, 21

Discusses : international legal requirements; food contact rubbers; non staling antioxidants; activators, retarders; end uses; and oils and stabilisers. BSN

1580 COX (EA). High performance liquid chromatographic determination of sulfanilic acid, Schaeffer's salt, 4,4-(Diazoamino)-dibenzenensulfonic acid, and 6,6'-Oxybis(2-Naphthalene-sulfonic acid) in FD & C Yellow No. 6 : Collaborative study. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 61-8

1581 HENRY (BS). Potential of plant material as a source of food colour. *Trop. Sci.* 21(3); 1979; 207-16

Concern over the safety of synthetic colours and the resultant restrictions on their use in foods has renewed interest in plant pigments as food colourants. Natural pigments produce a wide variety of brilliant colours though it would

appear that only a few are of commercial importance for the colouring of foods. These can be divided into five types: anthocyanins, betalaines, carotenoids, chlorophylls and curcumin. Sources, pigment structures and stability problems for these five pigment types are presented.

1582 HOTCHKISS (JH), LIBBEY (LM) and SCANLAN (RA). Confirmation of low µg/kg amounts of volatile N-nitrosamines in foods by low resolution mass spectrometry. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 74-9

1583 KINEBUCHI (M), KAWACHI (T), MATSUKURA (N) and SUGIMURA (T). Further studies on the carcinogenicity of a food additive, AF-2, in Hamsters. *Food Cosmet Toxicol.* 17(4); 1979; 339-41

The carcinogenicity of 2-(2-furyl)-3-(5-nitro-2-furyl) acrylamide (AF-2), once used as a food additive, was studied in golden hamsters of both sexes by continuous oral administration for 660 days at a level of 0.08 or 0.16% in the basal diet. Oesophageal tumours were found only in hamsters given 0.16% AF-2, the incidence being 35% in males and 6% in females. No tumours were found in other organs, except in phaeochromocytoma in the adrenal of a female given 0.08% AF-2. In the control groups, no tumours were observed in any organs examined. AA

1584 KING (WP), JOSEPH (KT) and KISSINGER (PT). Liquid chromatography with amperometric detection for determining phenolic preservatives. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 137-42

1585 MORRIS (EA). Turpentine for synthetic fragrance: A commercial appraisal. *Trop. Sci.* 21(3); 1979; 197-206

1586 PURNANANDAM (T) and MATHUR (VS). Standardization and quality control *vis-a-vis* regulations for food colours. *ISI Bull.* 33(3); 1981; 99-102

This covers, aspects like toxicological evaluation of food colours; permitted food colours in India; Indian Standards and specifications for food colours, use of coaltar food colours in food industries and the limitation in their use. MVG

CEREALS

1587 LANDEN (WO), Jr. Application of gel permeation chromatography and nonaqueous reverse phase chromatography to high pressure liquid chromatographic determination of retinyl palmitate in fortified breakfast cereals. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 131-6

PADDY

1588 ANAND PRAKASH, PASALU (IC) and MATHUR (KC). Save stored paddy from insects. *Indian Farming.* 30(6); 1980; 21, 32

Various practices for storage of paddy have been discussed. KAR

1589 BIREWAR (BR), RAMACHANDRA and KANJILAL (SC). Paddy straw and mud structure for storage of foodgrain. *Bull. Grain. Technol.* 17(3); 1979; 222-7

This indoor type unit constructed from paddy straw and mud has a storage capacity of 400 kg. The rat and moisture proof brick masonary base of the storage structureis above 500 mm from the ground level. A polythene sheet of 600 gauge is used by embedding it in the base to prevent entry of subsoil

moisture into the structure. It is constructed on a pre-constructed base, employing paddy straw rope coated with specially prepared mud having chaffed straw of wheat or paddy called "Bhusa'. Layer of rope is laid one over the other in a circular manner upto the desired height. It is then plastered on both sides with mud (Special type of mud containing 2 kg of 'bhusa' and one cu. ft. of soil, mixed thoroughly with water, kneaded and left for 8-10 days for complete decomposition of bhusa). On the external side, the storage structure is plastered with specially prepared water proof mud plaster (2 kg liquid bitumen with 0.25 kg wax in the prepared mud). A final coating of Gobri leep (cow dung and soil 50:50 and adding 2 kg liquid bitumen for every one cu. ft. of mixture prepared). Otherwise, another bituminous water proofing - Janatha emulsion (mixed with mud at 5% of dry soil may also be used. The construction cost has been worked out to be Rs. 184/- per storage structure. The structure was found to be rat proof, moisture as well as insect proof. Wheat stored in the storage structure showed 0.5-1.0% of weeviled grains during 8-month storage while the germination percentage decreased from 97.0 to 90.0%. The grain was also found to be free from fungal contamination at the end of the storage period. BSN

1590 NANDAKUMAR (NV) and UDAYA BHASKAR (S). Colorimetric method for determination of phosphamidon in paddy. *Indian Food Packer.* 34(5); 1980; 9-11

A simple, sensitive and rapid colorimetric method for quantitative estimation of an organophosphorus pesticide, phosphamidon (2, chloro-2-diethyl phosphate) in paddy,employing sheep liver as enzyme source and Fast blue B as a chromogenic salt has been outlined. The estimation may be completed in 30 min. Phosphamidon residues from 10 µg to 100 µg level may be estimated by this technique. By converting into a brominated product, even 1 to 10 µg amounts of the residue may be estimated as sensitivity of the colorimetric method gets increased tenfold. BSN

RICE

1591 EL SAADANY (RMA), FODA (YH) and EL SAADANY (FM). Improving of Egyptian rice by means of gamma irradiation. *Starch.* 31(7); 1979; 230-4

Gamma irradiation caused reduction in cooking time of rice grains with improvement in texture, flavour and appearance. Irradiation caused degradation of starch molecules, followed by decrease of viscosity of rice starch. Irradiated rice became more soluble and its swelling capacity decreased. These changes enhanced the extent of softening on cooking and shortened cooking time. Degradation of the thin protein film that covered rice starch granules due to irradiation is confirmed by the increase of free amino groups in the rice flour extract as this leads to a quicker penetration of water to the inner part of rice grains. AA

1592 INDRAVATHAMMA (P) and SESHADRI (HS). Lectin from rice. *J. Biosci.* 2(1); 1980; 29-36

1593 ITO (S), SATO (S) and FUJINO (Y). Internal lipid in rice starch. *Starch.* 31(7); 1979; 217-21

The starch of a Japanese rice variety contained 0.69% of internal lipid. The ratio of neutral lipid, glycolipid and phospholipid in the total lipid was 37.0; 20.3; 42.7. The principal components of the neutral lipid were free fatty acid and monoglyceride; those of glycolipid were monoglycosylmonoglyceride and diglycosylmonoglyceride; those of phospholipid were lysophosphatidylcholine and lysophosphatidyl ethanolamine. All were monoacyl lipids and

they constituted more than 90% of the total internal starch lipids. The predominant fatty acid components were palmitic acid and linoleic acid. The component sugars of glycolipids were galactose and glucose with galactose being predominant. Lysophosphatidylcholine and monoglyceride mostly of the α-type. AA

1594 PILLAIYAR (P). Requirements for long term storage of rice. *Bull Grain Technol.* 17(3); 1979; 228-32

Aspects covered include, quality of rice, factors influencing storage, external factors affecting stored rice, internal changes occurring and quality standards for stored rice. BSN

1595 PILLAIYAR (P). Potentiality and prospects for rice bran and rice bran oil in Tamil Nadu. *Madras Agric. J.* 67(5); 1980; 332-6

The demand for oil in the state of Tamil Nadu (India); potentiality of rice bran to meet the oil shortage; production of edible grade rice bran oil and its refining process have been covered. MVG

1596 PILLAIYAR (P) and MOHANDOSS (R). Hardness and colour in parboiled rices produced at low and high temperatures. *J. Food Sci. Technol. (India)* 18(1); 1981; 7-9

IR 20 var. of paddy soaked by cold, warm and hot soaking methods was parboiled at 70, 80, 90, 100, 110 and 120 C for 5 and 10 min. duration. For parboiling soaked paddy at temperature <100 C, a new system has been developed. The degree of milling and the milling breakage were not influenced by the parboiling conditions adopted. The parboiled rice obtained from cold soaked paddy was harder than from warm and hot soaked paddy. The parboiling temperature and duration had significant influence on the hardness. Rice colour depended on the temperature of soaking and parboiling. The possibility of producing light coloured parboiled rice at low temperature with the least milling breakage has been indicated. AA

WHEAT

1597 AGRAWAL (RK), SINGH (KN), SRIVASTAVA (PK) and VARMA (BK). Assessment of storage losses in wheat and different refractions in periodic arrivals in the mandis of Haryana. *Bull. Grain Technol.* 17(3); 1979; 202-8

A survey was conducted in August, October, December and February, 1976-77 crop year in order to assess the refractions of wheat in the mandi (wholesale market) arrivals of Haryana, India. The average loss in wt. due to insect damage was 0.66, 1.62, 2.90 and 4.01% in 3, 5, 7 and 9 months respectively during storage of wheat. The moisture percentage was recorded as 14.84, 11.0, 11.4 and 11.63 and germination as 90.1, 86.6, 84.4 and 80.3% respectively. The samples were analysed for various refractions and it was observed that in all the five districts the percentage of foreign matter ranged from 0.06 to 1.64, other foodgrains 0 to 16.8, weevilled kernels 0 to 26.8, damaged grain 0.8 to 13.2, shrivelled grain 0.6 to 7.4 broken grains 0 to 7.0 and germ eaten kernels 0 to 2.8. AA

1598 ASHOK KUMAR, DOHAREY (RB) and VARMA (BK). Comparative efficacy of some fumigants and their mixtures against stored grain insect pests. *Bull. Grain Technol.* 17(3); 1979; 213-5

Wheat filled in stacks (20' x 30' x 16' - having 156 metric tonnes of wheat in each stack) at Hapur, India, was artificially infested with (a) *Sitophilus oryzae* Linn (b) *Rhizopertha dominica* Fab, (c) *Tribolium castaneum*, Herbst and (d) *Trogoderma granarium* Everts. The initial moisture content and temperature

were 12% and 22 C respectively. Different fumigants ((i) methyl bromide (MB) at 24.28 g/m^3 (ii) MB + ethylene dibromide (EDB) (50:50 w/w) at 24.28 g/m^3, (iii) MB + EDB (75:25 w/w), at 16.20 g/m^3 (iv) MB + EDB (25:75 w/w) at 32.40 g/m3 dosage, (v) ED/CT (75:25) at 150 g/m^3 (vi) EDB at (22 g/m^3, (vii) EDB + CT (1.8) at 120 g/m^3) were employed and wheat and was exposed for 72 hour in case of (i), (ii), (iii) and (iv) and for 7 days in case of (v), (vi) and (vii). After 72 hour exposure mortality in (a) (b) (c) and (d) with (i), (ii), (iii) and (iv) and (v) was 100% and in (d) (iv) it was 67.2%. After 7 days exposure in (vi) mortalities of (a) (b) (c) and (d) were 86.4, 89.5, 40.6 and 43.7 % respectively whereas corresponding value with (vii) were 99.16, 100, 100, and 91.6 % respectively. Cost of fumigant for treatment of one tonne of grain has been reported as Rs. 1.75, 1.70, 1.10, 2.14, 3.20, 1.40, 2.11 for (i), (ii), (iii), (iv), (v), (vi) and (vii) respectively. BSN

1599 HARGIN (KD) and MORRISON (WR). The distribution of acyl lipids in the germ, aleurone, starch and non-starch endosperm of four wheat varieties. *J. Sci. Food Agric.* 31(9); 1980; 877-88

The quantitative distribution of 23 classes of acyl lipids was determined in the germ, aleurone, starch and endosperm non-starch fractions of Atou (soft English) Flinor (hard English), Waldron (US Hard Red Spring) and Edmore (US Amber Durum) wheats. All four wheats had similar proportions (dry basis) of pericarp (6.8-8.6%) germ (2.5-3.0%), starchy endosperm (78.7-84.5%) and starch (59.3-67.5%) and similar quantities of acyl lipids in the whole kernels (2.8-3.2%), germ (25.7-30.5%), starch (0.8-1.2%) and endosperm non-starch fractions (0.8-1.1%). KAR

1600 ROY (LN), NOORUDDIN SINGH (M) and LALL (LGS). Studies on relative efficiency of various proximate principles in commercial feeds and damaged grains. *Indian Vet. J.* 57(9); 1980; 730-2

Reduction in crude protein content varied between 12.76 to 41.44% on washing samples with distilled water. Highly significant linear relationship was found between the value of crude fibre and silica. An increase of 10-20% in the protein content of almost all damaged grains and 50% decrease in the ether extract in damaged wheat was observed. A reduction in fat content in damaged rice and maize was also observed. BSN

1601 TAVAKOLI (M) and ZAFAR-ALI (M). Effect of variety and location on protein and amino acid contents of wheat grain. *Indian J. Nutr. Diet.* 17(7); 1980; 251-7

3 var. of wheat ((i) Roshan, (ii) Omid and (iii) Bezostation) from 1974 and 1975 crops of (a) Karaj and (b) Savajbolagh Research Stations, Iran, contained 11.50-13.18% protein with max. in (iii), followed by 12.03% in (i). Essential amino acid content was 30.69% in (iii), followed by 28.69% for (i) and 27.91% for (ii). Protein and lysine and protein and glutamic acid, were inversely related in all the var. The impact of location was observed when 13.45% protein was observed with (iii) (a) compared to 13.18% for (iii)(b). Total essential amino acids, lysine, threonine methionine and phenyalanine were higher for location (b) than for location (a). BSN

RAGI

1602 MALLESHI (NG) and DESIKACHAR (HSR). Varietal differences in puffing quality of ragi (*Eleusine coracana*). *J. Food Sci. Technol.(India)* 18(1); 1981; 30-2

14 var. of ragi (*Eleusine coracana*) were studied for their puffing quality. The puffing yield ranged from 67 to 97%, and bulk volume from 3.9 to 7.7 ml/g; the effect of moisture content, conditioning time and puffing temperature were also studied for fixing optimum conditions which was found to be 19% moisture content. 4 hour conditioning and puffing insand nedium at 270 C. No consistent relationship was observed between grain amylose, protein content or thickness of bran with puffing quality among the 14 varieties. Purna, Annapurna, Shakti, P.R. 202, and Indaf-3 varieties possess good puffing quality. KAR

1603 SAIVARAJ (K), HABEEBBULLAH (B), BALASUBRAMANIAN (G) and BALASUBRAMANIAN (M). Insecticide residues in ragi. *Madras Agric. J.* 67(3); 1980; 192-3

Residues of insecticides (methyl demeton, monocrotophos, endosulfan, fenthion, malathion and chlorpyriphos sprayed 30 and 60 days after transplantation) to control aphids were estimated by bioassay and chemical analysis in ragi (finger millet). It was observed that only residues of monocrotophos and malathion could be detected in the grains with the other insecticides being at the undetectable level. Monocrotophos recorded 0.14 p.p.m. by bioassay method while the value was 0.15 p.p.m. by chemical analysis. With malathion, the residual value detected by bioassay being 0.35 p.p.m. MVG

SORGHUM

1604 SUAREZ (C), VIOLLAZ (P) and CHIRIFE (J). Diffusional analysis of air drying of grain sorghum. *J. Food Technol.* 15(5); 1980; 523-31

Fick's law of diffusion (moisture flux proportional to the moisture gradient) for diffusion out of spheres was successfully applied to describe the drying of grain sorghum. It was found that the diffusion coefficient of water was independentof moisture content in the approximate range of 21-6% (dry basis) moisture content. An arrhenius type temperature dependency of moisture diffusivity was found, the energy of activation being 7.5 kcal/g mol. AA

MAIZE

1605 JOGINDER SINGH, SUCY KOSHY, AGARWAL (KN), LODHA (ML), SINGH (NN) and SETHI (AS). Relative efficacy of opaque-2 maize in the growth of preschool children. *Indian J. Nutr. Diet.* 17(9); 1980; 326-34

Investigations were undertaken to determine the suitability of opaque-2 maize (*Zea mays* L.) as a supplement to the home diet of preschool children of selected low income families of Naraina and J.J. Colony of New Delhi. The study involved the feeding of one midday supplementary diet, providing one third of the recommended allowances of calorie and protein, to the three experimental groups namely the milk, the normal maize and the opaque-2 maize at the isocaloric and isoprotein level, over a period of 182 days. The control group did not receive any supplementary food. At the end of the supplementary feeding programme, the group of children fed on opaque-2 maize gained 8.3 and 25% more wt. compared to those fed on skim milk and normal maize groups respectively.

Data based on height, chest and mid-arm measurements for the four groups suggested that the children of the opaque-2 maize, in general recorded gains which were comparable or only next to the group fed on milk. The study suggested the use of opaque-2 maize as a superior quality protein substitute to normal maize or that it compares well with skim milk in supplementary feeding programmes of preschool children. AA

1606 MONTGOMERY (RR), NOFSINGER (GW) and BOTHAST (RJ). Preservation of high-moisture maize: A comparison of gaseous and liquid anhydrous ammonia to methylene-bis-propionate. *Bull. Grain Technol.* 17(3); 1979; 171-8

Freshly harvested maize with 22-24% moisture content was treated with gaseous anhydrous ammonia (0.5% wt of ammonia/wet wt of maize) or methylene-bis-propionate (0.8% wt/dry wt of maize) and stored for 6 months. Data given in graphs and tables show that bacteria and moulds could be controlled by both the treatments and that initial number of moulds and bacteria got reduced with liquid anhydrous ammonia treatment. Upto 4 months moulds predominantly, *Scopulariopsis brevicanlis* remained almost at non detectable levels, whereas bacteria increased to about the level of pretreatment during first month and remained at that level for the final 5 months of storage. BSN

1607 SINHA (AK), NATH (G) and SRIVASTAVA (BP). Studies on the extent of residues of phosphine in stored maize. *Bull. Grain Technol.* 17(3); 1979; 179-83

Phosphine residue levels in maize grains were determined by colorimetric method which gave a recovery of 78 to 81% with a sensitivity of 0.003 p.p.m. Residues of phosphine from treatment dosages of 2 (6 g) and 4 tablets/ton reached below the tolerance level of 0.01 p.p.m. in 0.82 and 2.84 days resp. The corresponding time for the residues to reach the level of detectability was 1.96 and 4.41 days. Phosphine fumigation even with 4 tablets/ton did not impair germination. BSN

PULSES

1608 PANDEY (GP), SRIVASTAVA (JL) and VARMA (BK). Studies on organoleptic qualities and rancidity of black gram (*Phaseolus mungo*) and green gram (*Phaseolus aureus*) treated with edible oils. *Bull. Grain Technol.* 17(3); 1979; 233-5

Rancidity measured as (a) alcoholic acidity and (b) free fat acidity and organoleptic qualities of black gram (*Phaseolus mungo*) and green gram (*Phaseolus aureus*) treated with (i) 0.3% mustard oil and (ii) 0.3% coconut oil and stored for 6 months were evaluated after cooking for 45 min. (i) and (ii) protected both the grams against pulse beetles without affecting smell, while taste and palatability were also good and agreeable. Rancidity did not develop and the values for (a) and (b) were 0.25-0.29% and 28.25-41.80 initially and 28.25-41.80% and 42.93-54.23% respectivley after storage for six months. BSN

1609 PRUTHI (JS), MANAN (JK), KALRA (CL) and RAINA (BL). Studies on the physicochemical composition and formulation of quality standards for traditional savoury foods. Part I. Black gram (urad) wadian and green gram (mung) wadian. *ISI Bull.* 33(2); 1981; 56-62

51 commercial samples of wadian, a traditional Indian savoury food made by soaking overnight black gram or green gram, dehusking, wet grinding and drying for 6-7 days after addition of spices, were evaluated for physiochemical properties. Both types of wadian were good sources of protein and carbohydrate. Regional variations in chemical composition were not as significant in green gram wadian as in black gram wadian. Wadian were free from Coliforms and

Streptococci. The following quality standards were suggested for black gram and green gram wadian: Moisture 11 and 12%, total ash 4.5 and 8.0%, acid insoluble ash 0.4 and 1.0% max. protein 16.0 and 16%, and acidity (as lactic acid) 1.75 and 0.85%. MVG

MUNG BEAN

1610 MANOHAR (S) and BALASUBRAMANIAN (M). Dissipation of monocrotophos residues in black gram husk and grains. *Madras Agric. J.* 67(4); 1980; 256-60

Monocrotophos (Nuvacron) was sprayed on black gram plants at 0.4 kg active ingredient/ha on 7th, 21st, 35th and 55th day after sowing. Residues in husk and grains were estimated by colorimetry and bioassay. After 12th day of spray, residues in husk were undetectable. In the grain, the residue was 0.2 p.p.m. as determined by chemical analysis. Bioassay values, were slightly above tolerance limits both at 12 days and 20 days after spraying. It was concluded 20 days was the minimum waiting period for safe consumption. MVG

WINGED BEAN

1611 NARAYANA (K). Cooking characteristics of winged bean. (*Psophocarpus tetragonolobus*). *J. Food Sci. Technol. (India)*. 18(1); 1981; 32-3

Winged bean was treated (i) by direct addition, (ii) by coating or (iii) by presoaking with ammonium carbonate (0.5% solution) along with sodium carbonate or sodium bicarbonate (0.5% solution) to reduce the cooking time. Cooking characteristics observed are cooking time, water uptake, and dispersed solids %. Addition of these chemicals reduced the cooking time by 50% (150 to 70-75 hour (i) imparted alkaline taste and undesirable colour to the product where as (ii) and (iii) were found desirable methods. KAR

1612 GARCIA (VV) and PALMER (JK). Proximate analysis of five varieties of winged beans, *Psophocarpus tetragonolobus* (L.) DC. *J. Food Technol.* 15(5); 1980; 469-76

The proximate composition of five varieties of winged bean (*Psophocarpus tetragonolobus*) were protein 36.0 ± 1.8%, fat 15.2 ± 1.2% and moisture 10.4 ± 1.5%. Endosperm was found to constitute 84% of the dry wt of the seeds, and hulls about 16%. Whole bean contained about 14% dietary fibre as neutral detergent fibre. BSN

1613 GARCIA (VV) and PALMER (JK). Carbohydrates of winged beans, *Psophocarpus tetragonolobus* (L.) DC. *J. Food Technol.* 15(5); 1980; 477-84

Winged beans analysed for carbohydrates and showed 9.8 - 13.8% soluble sugars, verbarcose 0.2 - 0.9% stachyose 2.2-3.6%, raffinose 1.1-2.0% and sucrose 5.6-8.2%. Total soluble sugars account for 77% of the total carbohydrates. BSN

CLUSTER BEAN

1614 AHUJA (BS) and CHOPRA (AK). Evaluation of guar (*Cyamopsis tetragonoloba*) protein fractions for their nutritive value. *Baroda J. Nutr.* 7; 1980; 7-10

Out of the two protein fractions (precipitated at pH 4.0 (A) and 8.4 (B)) obtained from defatted guar dhal, fraction B had very high trypsin inhibiting activity whereas fraction A had little activity. Fraction A as protein source in mice at 10 and 15% levels maintained the growth while at 5% it did not. With fraction B at 10% level, there was 50% mortality. In *vitro* digestibility of fraction A compared with that of casein, while that of fraction B was significantly less. MVG

LOCUST BEAN

1615 CAMPBELL-PLATT (G). African locust bean (Parkia species) and its West African fermented food product dawadawa. *Ecol. Food Nutr.* 9(2); 1980; 123-32

OILSEEDS AND NUTS

SOYABEAN

1616 BARBIND (RP), REDDY (VG) and DABHEDE (RSD). Note on the protein and oil content in soyabean (*Glycine max*(L) Merrill). *Res. Bull. Marathwada Agric. Univ.* 4(3); 1980; 33-4

SUNFLOWER

1617 KEHSE (Von W). Winterization of sunflower oil. *Fette Seifen Anstrichm.* 81(12); 1979; 463-6 (German)

Properties of sunflower oil that influence the process of winterization have been examined. Moreover, the conditions of crystallization of waxes and mixed chain glycerides have been studied. Filtration performance and the significance of the use of filter aids have been discussed, using five working plants as examples. The last plant that is described has a filter of a new design. It is a vacuum rotary filter in which the rate of filtration during the first few minutes of a batch is a multiple of the average rate over several hours. It has a cycle time of just 15 minutes and requires only 5 m^2 of filter surface to filter 60 t/day; thus, its filtration rate is as high as 543 l/m^2h. KMD

PEANUT

1618 ROMO De VIVAR (E) and BRENNAN (JG). Instrumental texture measurement. A brief study on peanuts. *Inst. Food Sci. Technol. (UK) Proceed.* 13(3); 1980; 213-8

The use of instruments in texture measurement, the test procedures and the results obtained with Instron Universal Testing Machine are given. KAR

1619 WALTKING (AE). Sampling and preparation of samples of peanut butter for aflatoxin analysis. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 103-6

COCONUT

1620 SWETMAN (AA) and BROADBENT (JH). Sugar content variation of coconuts prior to the manufacture of desiccated coconut in Sri Lanka. *Trop. Sci.* 21(1); 1979; 33-8

Desiccated coconut (DC) made in Sri Lanka is commonly considered to be sweeter than that made in the Philippines. The authors have noted that in Sri Lanka unhusked coconuts are stored (or "seasoned") for up to 6 weeks before DC is produced, whereas "seasoning" is not done in the Philippines; the method of sterilization is also slightly different in the two countries. Analysis of stored coconuts (of 4 cultivars) showed that the sugar content rises to a maximum after one week of storage, and then falls gradually. Hence the "seasoning" period should be limited to one week, if one desires to have a desiccated coconut

of maximum sweetness. KMD

TUBERS AND VEGETABLES

1621 KING (PI). Selected European markets for dehydrated vegetables : The potential for a developing country. *Trop. Sci.* 21(4); 1979; 231-47

The marketing of four dehydrated vegetables (onions, carrots, leeks, and mushrooms) in the U.K., Netherlands, and W. Germany has been studied in detail. The main users of dehydrated vegetables are the dried soup manufacturers, followed by other food manufacturers and the catering and retail trade. Specific quality requirements for the four main vegetables have been reported. Current price levels are also indicated. Though European traders are on the look out for new sources of supply, only good quality produce will fetch high enough prices, for a developing country to enter this market successfully. KMD

1622 PIRIE (NW). The temporary preservation of leaf protein. *Indian J. Nutr. Diet.* 17(9); 1980; 349-52

Aspects covered include: preparation, preservation of leaf protein, without added preservative, with salt, with sugar and with acetic acid. BSN

1623 "STRESS METABOLITES IN FRUITS AND VEGETABLES". SYMPOSIUM. *J. Food Prot.* 42(6); 1979; 495-534

The following papers are contained in this issue:

HARD (NF) and SALUNKHE (DK) : Introduction (p.498)
WOOD (GE) : Stress metabolites of plants : A growing concern (p. 496-501)
OSMAN (SF), ZACHARIUS (RM), KALAN (EB), FITZ PATRICK (TJ) and KRULICK (S) : Stress metabolites of the potato and other solanaceous plants (p. 502-7)
KUC (J), HENFLING (J), GARAS (N) and DOKE (N). Control of terpenoid metabolism in the potato : *Phytophthera infestans* interaction (p. 508-11)
CHEEMA (AS) and HAARD (NF) : Induction of rishitin and lubinin synthesis in potato tuber slices by non-specific elicitors Role of gene derepression (p. 512-8)
SALUNKHE (DK) and WU (MT) : Control of postharvest glycoalkaloid formation in potato tubers (p. 519-25)
SARKAR (SK) and PHAN (CT) : Naturally occurring and ethylene - induced phenolic compounds in carrot root (p. 526-34) KMD

BEET

1624 KEARSLEY (MW) and KATSABOXAKIS (KZ). Stability and use of natural colours in foods. Red beet powder, copper chlorophyll powder and cochineal. *J. Food Technol.* 15(5); 1980; 501-14

Stability of natural colours in foods were examined to assess their colouring stability in different model systems. All the colours were heat labile, Red beet was rapidly degraded above 14 C. Cochineal was highly stable; data on changes in pH acetels the colour stability. Colour stability at various temperatures have been reported. BSN

CARROT

1625 BRUNS (GW) and CURRIE (RA). Extraction of pentachlorophenol and tetrachlorophenol residues from field-contaminated carrots and potatoes: Comparison of several methods. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 56-60

POTATO

1626 RACUSEN (D) and FOOTE (M). A major soluble glycoprotein of potato tubers. *J. Food Biochem.* 4(1); 1980; 43-52

1627 SUMATI MUDAMBI (R) and RAJAGOPAL (MV). Role of potato in child nutrition. *Indian Food Packer.* 34(5); 1980; 25-32

The use of potato as a weaning foodfor infants; comparison of nutrients available from potato with those from foods traditionally used at weaning stage; the essential amino acid profile; the possible use of potato as a base with admixture of protein rich foods and the technological and economic problems that may be encountered in this regard are the aspects covered. AA

SWEET POTATO

1628 WILSON (BJ) and BURKA (LT). Toxicity of novel sesquiterpenoids from the stressed sweet potato (*Ipomoea batatas*). *Food Cosmet. Toxicol.* 17(4); 1979; 353-5

Five, three-substituted furans recently isolated from stressed sweet potato root tissue, were injected into mice to obtain LD_{50} values and to study the gross and microscopic pathology. All compounds produced temporary neurological effects followed by development of extensive necrosis in the liver. The LD_{50}s varied from 184 to 266 mg/kg except for the most toxic compound, 6-myoporol, which had an LD_{50} of 84 $\pm$ 10 mg/kg. The former values are comparable to those for ipomeamarone, usually the most abundant sesquiterpenoid found in stressed sweet potato tissue. AA

TAPIOCA

1629 ABRAHAM (TE), RAJA (KCM), SREEMULANATHAN (H) and MATHEW (AG). Improvement of texture of cassava flour by Chemical treatment. *J. Root Crops.* 5(1&2); 1979; 11-8

Among the chemical treatments employed (sodium trimetaphosphate and epichlorohydrin in alkaline pH and phosphorus oxychloride in acid pH), the best results in reducing pastiness were observed when cassava flour was treated with 1.0-1.5% of sodium trimetaphosphate at pH 10.0-10.4. BSN

1630 AFUNSO (M) and BASSIR (D). Mannitol content of "gari" and other cassava-based foodstuffs. *Trop. Sci.* 21(4); 1979; 273-4

"Gari", "Fufu" and "Lafun" are cassava based products consumed in Nigeria. Some fermentation and heat treatment are employed in their preparation, and result in a 6 to 13 fold increase in their mannitol content as compared to raw cassava tubers: i.e. "Gari" 400-500, "Fufu" about 700, and "Lafun" about 330 mg/100 g, as compared to raw cassava 53 mg/100 g. As about 20 g. of mannitol can be safely ingested by a human being daily, these foods do not pose any health hazard in Nigeria. KMD

TOMATO

1631 LESAGE (S). Effect of cupric ions on the analysis of ethylene bis (dithiocarbamate) residues in tomato juice. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 143-5

CUCUMBER

1632 McFEETERS (RF), BELL (TA) and FLEMING (HP). An endopolygalacturonase in cucumber fruit. *J. Food Biochem.* 4(1); 1980; 1-16

FRUITS

1633 HEATON (KCF), ROBINSON (FD) and LEWIN (M). Sorbitol. *Inst. Food Sci. Technol. (UK) Proceed.* 13(3); 1980; 157-66

Aspects covered include, occurrence of sorbitol in fruits, chemical identity, commercial production, grades of sorbitol, benefits of sorbitol and applications of sorbitol in food, pharmaceuticals, toileteries and cosmetics. KAR

DATE

1634 AUDA (H). Date irradiation in Iraq. *Food Irradiat. Inf.* No.10; 1980; 34-40

The review covers the work done on irradiation disinfestation of dates along with the radiation induced chemical changes and wholesomeness studies. KAR

BANANA

1635 LEVI (A), RAMIREZ-MARTINEZ (JR) and PADUA (H). Influence of heat and sulphur dioxide treatments on some quality characteristics of intermediate-moisture banana. *J. Food Technol.* 15(5); 1980; 557-66

The effect of duration of heat treatment (blanching) on the firmness, dehydration rate, colour, and pectin esterase (PE) activity, was investigated in sulphited, unsulphited, blanched and non heat-treated intermediate-moisture banana (IMB). The product was significantly firmer if the bananas had been blanched, and in either event, firmness as measured with a texturometer, also increased with increasing SO_2 concentration. The average rate of water removal (dehydration) increased, with increasing blanching time, up to about 4 min. and increased also with increasing SO_2 concentration. There was a decrease in PE activity in both blanched and non heat-treated IMB, with increasing SO_2 content The effect of sulphiting on pectolytic enzyme activities does not appear to have been reported previously. AA

MANDARIN

1636 RAMANA (KVR), RADHAKRISHNAIAH SETTY (G), MOORTHY (NVN), SAROJA (S) and NANJUNDASWAMY (AM). Effect of ethephon, benomyl, TBZ and wax on colour and shelf-life of Coorg mandarins (*Citrus reticulata*, Blanco). *Trop. Sci.* 21(4); 1979; 265-72

Mandarins harvested in Coorg during the monsoon (June-July) suffer heavy spoilage due to warm and humid climatic conditions during harvest. The best post-harvest treatment for increasing the storage life of these fruits is to first dip them in ethephon (500 ppm, for degreening) and then in a 6% wax emulsion containing either 1000 ppm thiabendazol or 250 ppm of benomyl. KMD

APRICOT

1637 SUD (G) and MISHRA (KA). The effect of ethrel (2-chloroethyl phosphonic acid) on ripening of 'New Castle' apricot (*Prunus armeniaca* L.). *Indian Food Packer.* 34(5); 1980; 14-5

Ethrel was sprayed at (a) 100, (b) 200, (c) 300, (d) 400, (e) 500 and (f) 600 p.p.m. concentration on 15 year old 'New Castle' apricot trees to enhance the ripening period to regulate the market supply of fruits. Ripeness of the fruit was judged by development of apricot yellow colour and physico-chemical parameters. ((i) TSS, (ii) acidity, (iii) red-sugars, (iv) total sugars, (v) TSS/acid ratio, (vi) colouring rating and (vii) ripening enhanced by number of days.). Data reported (range of values) for (i), (ii), (iii), (iv) and (v) were: 12.2-13.3%, 0.80-0.95%, 1.28-1.92%, 4.40-6.16%, 13.60-16.43% respectively. The ripening was enhanced by 1-5 days by ethrel treatment. This study indicated that ethrel spray at (e) and (f) doses enhanced ripening of fruits by 5 days. BSN

CHERRY

1638 PRUTHI (JS), SAXENA (AK) and TEOTIA (MS). Cherries. I. Agri-horticultural and chemical aspects. *Indian Food Packer.* 34(5); 1980; 33-58

Aspects covered include: production; terminology and classification; Indian varieties; agri-horticultural aspects; biochemical changes during maturation (nitrogenous substances, anthocyanins, flavonoids and polyphenols, effect of growth regulators, ethylene and ethylene treatment and of alar, ethrel, and ethephon, indicies of fruit maturity; physico-chemical composition (wt. of fruits, moisture, soluble and insoluble DM, total and reducing sugars, acidity, protein, fat, fibre, pectin, ash, carbohydrates, organic acids, amino acids, pigments, polyphenols, vitamins); enzymes (polyphenoloxidase, catecholase, pectic enzymes, peroxidases, malic and other enzymes); aromatic principles; and trace elements. BSN

PEACH

1639 FLURKEY (WH) and JEN (JJ). Purification of peach polyphenol oxidase in the presence of added protease inhibitors. *J. Food Biochem.* 4(1); 1980; 29-41

APPLE

1640 COCHRANE (WP), LANOUETTE (M) and GRANT (R). High pressure liquid chromatographic determination of naphthaleneacetamide residues in apples. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 145-8

1641 FEYS (M), TOBBACK (P) and MAES (E). Volatiles of apples (var. 'Schone van Boskoop'): Isolation and identification. *J. Food Technol.* 15(5); 1980; 485-92

A simple method has been developed for analysis of volatiles of apples by means of a modified vacuum-cold trap distillation, which can be directly applied to GLC. Trichloroacetic acid addition prevents formation of volatile aldehydes. Fifteen volatiles have been identified and quantified. 85% of total volatile fraction was found to be alcohols. BSN

1642 KNEE (M). Methods of measuring green colour and chlorophyll content of apple fruit. *J. Food Technol.* 15(5); 1980; 493-500

Ripening of apple is accompanied by change in colour from green to yellow

Chlorophyll content in fruit peel can be estimated by spectrophotometry. Reflectance values were measured using Backmann Spectrophotometer and compared with colorimeter readings. Reflectance at 675 nm gave the best relative measurement of the progress of colour change during storage. A simple colorimeter that could be used for rapid measurements with calibrations, is described in this paper. BSN

PAPAYA

1643 JANABAI GIRI, BHUVANESWARI (V) and TAMILARASU (R). Evaluation of the nutritive content of five varieties of papaya in different stages of ripening. *Indian J. Nutr. Diet.* 7(9); 1980; 319-25

5 var. of papaya ((i) CO_1, (ii) Co_2, (iii) Solo, (iv) Washington and (v) Honey dew)) were examined at different stages of ripening ((a) half ripe (b) full ripe, (c) over ripe) for their nutrient composition, (d) total carotenoids, (e) β-carotene, (f) vitamin C, (g) total soluble solids, (h) total carbohydrates and (i) pectin), to determine the stage of ripening and var. wherein the nutrients are present in max. amounts. From the data reported, it was found that the levels of (d), (e), (f), (g) and (h) increased from (a) and reached max. at (b) and declined at (c). (i) content, decreased gradually from (a) to (b) and then to (c). Among the 5 var. (i) was found superior to other var. as it contained the highest amounts at (b) stage of (d) (3.4667 ± 0.3330 mg/100 g), (e) (1.660 ± 0.4113 mg/100 g) and (h) (11.260 ± 0.180 g/100g). However, with regard to (f) content it was occupied third position (50.166 mg% as against 74.000 ± 4.000 for (v) var. and 65.456 ± 3,104 for (iii) var.) and was found to be a good source of (f). BSN

SUGAR, STARCH AND CONFECTIONERY

SUGAR

1644 BLAKENEY (AB) and MUTTON (LL). A simple colorimetric method for the determination of sugars in fruit and vegetables. *J. Sci. Food Agric.* 31(9); 1980; 889-97

A rapid, manual colorimetric method for determining glucose, fructose and sucrose in fruit and vegetables is described. The method is based on the determination of reducing sugars before and after invertase digestion using p-hydroxybenzoic acid hydrazide (PAHBAH). Total fructose (fructose plus fructose in sucrose) is determined using 2-thiobarbituric acid and the component sugars calculated. Addition of sugars to fruit extracts gave good recoveries (97.4-101.8%) for glucose, fructose and sucrose. AA

1645 WHITE (JW) Jr. Detection of honey adulteration by carbohydrate analysis. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 11-8

Thirteen market samples of falsified honey containing invert sirups or conventional corn sirup and 2 labeled mixtures have been analyzed. Results are interpreted in relation to literature values for various carbohydrate constituents of honey and their vulnerability. Published data on composition of United States honey have been refined for this purpose by eliminating samples containing a major portion of honeydew, thus anarrowing the compositional ranges for known honey. AA

1646 WHITE (JW) Jr. and SICILIANO (J). Hydroxymethylfurfural and honey adulteration. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 7-10

Analysis of 481 samples of extracted honey, and 41 comb honeys from producers, and samples of honey before and after processing by 8 packers, provided basic data for establishing guidelines for hydroxymethylfurfural (HMF) content of honey. A sample, containing 20 mg/100 g, or more, should be considered as possibly adulterated and subjected to additional analysis for confirmation of the presence or absence of adulteration. Extremely high (about 50 mg/100 g) values are, however, conclusive. KMD

STARCH

1647 CARLSON (TL-G), LARSSON (K), DINH-NGUYEN (N) and KROG (N). A study of the amylose-monoglyceride complex by Raman spectroscopy. *Starch.* 31(7); 1979; 222-4

The interaction between monostearin and amylose in an aqueous environment has been studied by Raman spectroscopy. A perdeuterated lipid was used to follow the C-D stretching vibrations. The hydrocarbon chain conformation inside the amylose helix seems to be ordered as in the crystalline state, and the geometry of the amylose V form of this complex corresponds to nearly three turns of the helix per hydrocarbon chain. The maximal amount of monoglyceride obtained experimentally was in the complex (1:5 monoglyceride:amylose). AA

1648 KENNEDY (JF), WHITE (CA) and RIDDIFORD (CL). Action pattern and substrate specificity of alpha-amylase K, a novel amylase from a strain of *Bacillus subtilis*. *Starch.* 31(7); 1979; 235-41

1649 OOSTEN (BJ). Substantial rise of gelatinization temperature of starch by adding hydroxide. *Starch.* 31(7); 1979; 228-30

The initial gelatinization temperatures of several corn starch suspensions in alkaline sulphate solutions were determined. In trying to correlate the data, an unexpected effect of the hydroxide concentration upon the gelatinization temperature was discovered. Subsequent experiments did reveal substantial rise in the gelatinization temperatures after having added hydroxide to the starch suspensions in salt solutions. As great a rise as 25 C was observed. The results of further experiments indicate that this hydroxide effect is common to all starches suspended in solutions of an inorganic salt. AA

1650 WOOTTON (M) and CHAUDHRY (MA). Enzymic digestibility of modified starches. *Starch.* 31(7); 1979; 224-8

Gelatinized, unmodified and modified wheat starches were hydrolysed with porcine pancreatic α-amylase. The digestibility was estimated by increase in reducing power and by decrease in blue value. The digestibility of the starch was considerably reduced by substitution with hydroxypropyl and acetate groups, while cross-linking with phosphate had a lower effect on its digestibility. Etherification with hydroxypropyl groups lowered the digestibility of the starch to a larger extent than esterification with acetate. Substitution with hydroxypropyl and acetate groups increased the degree of random attack by porcine pancreatic α-amylase on the wheat starch to a larger extent that cross-linking with phosphate. AA

CONFECTIONERY

1651 MIPM (BPS). Engineering training in the confectionery industry. *Confect. Prod.* 46(5); 1980; 211-2, 221

1652 SWEETMAKER. Boiled sweets : Exciting prospect. *Confect. Prod.* 46(5); 1980; 225-8

CHOCOLATE

1653 MINIFIE (BW). Lecithin: Use in chocolate, confectionery as an emulsifier and in powdered drinks as a wetting agent. *Manuf. Confect.* 60(4); 1980; 47-50

Discusses : use in chocolate; effects of addition; tempering; temperature effects; antioxidant and antibloom properties; synthetic phospholipids, modified lecithins; lecithin in food drinks; lecithin in other confectionery products. BSN

1654 RICHARDSON (T). Confectionery production: Chocolate fudge. *Manuf. Confect.* 60(4); 1980; 73-4

BAKERY PRODUCTS

1655 LEELAVATHI (K), HARIDAS RAO (P) and SHURPALEKAR (SR). Use of starch phosphate in bread and biscuits. *J. Food Sci. Technol. (India).* 18(1); 1981; 3-7

Starch phosphate (SP) was added at 0.5-5.0% and 0.1-1.0% of wheat flour to improve the bread and biscuit making quality respectively. Farinograph characteristics were affected adversely with higher levels (> 1%) of SP. Extensograph characteristics improved >2% SP. Loaf volume crumb grain, texture and eating quality of bread deteriorated at higher levels of SP. The spread, hardness and baking strength of biscuits increased at higher levels (>1.0%) of SP. KAR

1656 SEKHON (KS), RANDHAWA (SK), SAXENA (AK) and GILL (KS). Effect of washing/steeping on the acceptability of Karnal Bunt infected wheat for bread, cookie and chapati making. *J. Food Sci. Technol. (India).* 18(1); 1981; 1-2

The effect of washing/steeping on the acceptability of bread, cookie and chapati prepared from 1, 3, 5, 10 and 14% Karnal Bunt (caused by *Neovossia indica* (Mitra) Mundker) infected wheat were investigated. The infected kernels did not adversely affect the loaf volume and specific volume but affected the crumb texture, crumb colour and taste of the bread. The colour, taste and flavour of chapaties and cookies were also adversely affected. Washing with water or steeping for 30 minute improved the loaf volume and specific volume and improved the colour, flavour and taste of bread, chapati and cookies; the products prepared from 5% infected wheat were comparable to disease-free samples and those with 10% infection were acceptable. KAR

1657 CHAMBERLAIN (N), COLLINS (TH) and FISHER (N). Methods for the production of acceptable bread from storage-deteriorated flours. *J. Food Technol.* 15(5); 1980; 515-21

Bread from flour, deteriorated during storage, was prepared by using extra fat, extra yeast and extension of proof-time. Flour phospholipid and glycolipids showed restorative effect. The cost of preparation was reduced when extra yeast was added as compared to addition of extra fat. BSN

1658 BEATON (NC). Ultrafiltration and reverse osmosis in the dairy industry : An introduction to sanitary considerations. *J. Food Prot.* 42(7); 1979; 584-90

1659 PETERKIN (PI) and SHARPE (AN). Membrane filtration of dairy products for microbiological analysis. *Appl. Environ. Microbiol.* 39(6); 1980; 1138-43

MILK

1660 GANGULI (NC). Numerous nutrients in milk. *Arogya.* 6(1); 1980; 1-15
Review discusses : milk constituents and its relatives; hierarchy of species with milk composition; nutrients of human milk; minerals; vitamins; milk production data; milk in infant nutrition; humanized milk; whey constituents for human food; nutritional factors of fermented milk; and deficiencies of milk. BSN

1661 GINN (RE), PACKARD (VS) and THOMPSON (DR). Comparison of the automated with the semi-automatic coulter counter method and the direct microscopic somatic cell count (DMSCC) on raw milk samples. *J. Food Prot.* 42(7); 1979; 567-8

1662 LAGRANGE (WS). Opportunities to improve milk quality. *J. Food Prot.* 42(7); 1979; 599-603

1663 SWEETSUR (AWM) and MUIR (DD). Properties of concentrates containing milk protein and non-milk carbohydrates. *J. Food Technol.* 15(5); 1980; 533-42
Various edible carbohydrates were combined with skim-milk concentrate, prepared by ultrafiltration (UF), to obtain a novel range of milk products with total solids contents greater than 40%. These products were very heat stable, their stability being inversely proportional to the reducing power of the carbohydrate in the mixture. In contrast to both unaltered UF concentrate and conventional concentrate prepared by evaporation, the heat stabilities of the UF concentrate/carbohydrate mixtures could be further improved by addition of urea. As with both conventional and UF concentrates, the heat stabilities of the mixtures could be increased by additions of simple aldehydes. AA

COW MILK

1664 VILIM (A), LAROCQUE (L) and MACINTOSH (A). Depletion of brilliant blue F.C.F. and Penicillin G in milk from treated cows. *J. Food Prot.* 42(6); 1979; 491-4

CHEESE

1665 IBRAHIM (GF), RADFORD (HM) and FELL (LR). Determination of Staphylococcal enterotoxin A in cheddar cheese produced without starter activity. *Appl. Environ. Microbiol.* 39(6); 1980; 1134-7

1666 MORRIS (C). International cheese trends. *Food Eng. Int.* 5(5); 1980; 30-6

1667 NORTHOLT (MD), VAN EGMOND (HP) and SOENTORO (P). Fungal growth and the presence of sterigmatocystin in hard cheese. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 115-9

1668 STREIFF (PJ), NILSON (KM), DUTHIE (AH) and ATHERTON (HV). Whey ricotta cheese manufactured from fluid and condensed whey. *J. Food Prot.* 42(7); 1979; 552-4

1669 VAN EGMOND (HP), PAULSCH (WE), DEIJLL (E) and PIETER (L). Thin layer chromatographic method for analysis and chemical confirmation of sterigmatocystin in cheese. *J. Assoc. Off. Anal Chem.* 63(1); 1980; 110-4

MEAT AND POULTRY

1670 ABBOTT (JD) and ROBERTSON (L). The isolation of *Salmonellas* from minced meat. *Environ. Health.* 88(6); 1980; 123-4

An examination of 1301 samples of minced meat showed that the isolation rate of *Salmonellas* varied with the type of minced meat; home produced minced beef sold loose (4.6 per cent), minced beef of unknown origin (23.8 per cent) and home produced pork (21.8 per cent). Isolation rates were highest during July-September. Wide variety of serotypes among isolates was observed. BSN

1671 CORNFORTH (DP), PEARSON (AM) and MERKEL (RA). Relationship of mitochondria and sarcoplasmic reticulum to cold shortening. *Meat Sci.* 4(2); 1980; 103-21

1672 HANNA (MO), SMITH (GC), HALL (LC) and VANDERZANT (C). Role of *Hafnia alvei* and a *Lactobacillus* species in the spoilage of vacuum-packaged strip lion steaks. *J. Food Prot.* 42(7); 1979; 569-71

A microbiological examination of vacuum-packaged strip loin steaks that were defective (gassy packages, hydrogen sulfide odour) revealed high total counts (10^7-10^8/cm^2) with *Hafnia alvie. Lactobacillus* and *Pseudomonas* spp. as major isolates. Re-inoculation experiments indicated that *H. alvei* was the likely cause of the hydrogen sulfide odour. Gas formation resulted from the activity of heterofermentative lactobacilli and *H. alvei.* Improvements in plant practices and temperature control eliminated the problem. AA

1673 HSIEH (Y-PC), PEARSON (AM) and MORTON (ID) and MAGEE (WT). Some changes in the constituents upon heating a model meat flavour system. *J. Sci. Food Agric.* 31(9); 1980; 943-9

Percentage changes in the amino acid content upon heating with different components in a synthetic model meat flavour mixture were followed during different stages in development of the system. Heating of ten different amino acids with a simple sugar mixture (glucose, ribose and xylose) resulted in losses of approximately 95, 58, 38 and 37% of the cysteine, methionine, leucine and isoleucine, respectively, whereas the other amino acids decreased by 19-31%, but the ammonia (NH_3) content by only 5%. On heating gelatin with the simple sugar mixture, tyrosine and phenylalanine losses amounted about 58 and 40% respectively, while the other amino acids declined by 27-37% and the NH_3 content by some 12%. Heating of the composite model system (gelatin, added amino acids and simple sugars) resulted in losses of about 94, 60 and 55% of the cysteine, methionine and histidine, respectively, while the other amino acids decreased by 20-35% and the NH_3 content by 15%. The possible role of some of the amino acids in the development of the synthetic meat flavour system is disucssed in view of these findings. AA

1674 KOZLOWSKA (H), ELKOWICZ (K) and RUTKOWSKI (A). Thermal inactivation of trypsin inhibitors of soy bean preparations added to meat. *Meat Sci.* 4(2); 1980; 95-102

Replacement of thirty per cent meat protein in minced meat by soyprotein products (flakes, concentrates, isolates, textured flour) in aqueous suspensions resulted in higher trypsin inhibitory activity as compared to dry products. In all the soy bean preparations, heat treatment (70, 80, 90 and 100 C) for 15 min reduced the inhibitory activity in both model meat systems (MMS) and in suspensions. In MMS, trypsin inhibitory activity was higher than in water suspensions, suggesting thereby that meat components protect trypsin inhibitor protein against heat treatment, unfavourable nutritional effects were not perceptible in trypsin inhibitory activity in heated MMS as it was at a very low level. BSN

1675 MADARENA (G), DAZZI (G), CAMPANINI (G) and MAGGI (E). Organochlorine pesticide residues in meat of various species. *Meat Sci.* 4(2); 1980; 157-66

Fourteen pesticides residues (α, β, γ and δ-BHC isomers, aldrin, dieldrin, heptachlor and heptachlor epoxide, DDT and its metabolites, DDE and DDD both as O, p' and as p, p') estimated in pork, chicken, turkey, rabbit and horse meat have been reported. Levels of residual pesticides were found to be higher in the later three meats than in the former two meats. Residual levels were not related to fat contentof meat. BSN

1676 MERRITT (C) Jr. The analysis of radiolysis products in meats and meat substances. *Food Irradiat. Inf.* No. 10, 1980; 20-33

The studies of the composition of radiolysis products in meat have been extended now to include the compounds of lesser volatility, which could not be previously isolated by vacuum distillation methods. New techniques employing solvent extraction, size exclusion chromatography, liquid chromatography and other specialised procedures have permitted the separation and identification of many compounds in meat that have been predicted from earlier studies of model systems. KAR

1677 NORMAN (GA), SILVERSIDE (D), HECTOR (DA) and FRANCIS (S). The acid treatment of animal by-products. *Trop. Sci.* 21(4); 1979; 221-9

A study has been made of the manufacture of animal feed by acid treatment of the waste from small municipal and rural slaughter-houses in tropical developing countries. It is a very flexible process that can be adapted to small or large commercial enterprises. It requires a low capital investment, and minimal training or expertise. It can reduce the problems of pollution and effluent waste disposal. The acid-treated material can be used either as a liquid feed ingredient for pigs, or in a dried form - incorporating a carbohydrate filler - as a component of a poultry ration. KMD

1678 OBANU (ZA), LEDWARD (DA) and LAWRIE (RA). Lipid-protein interactions as agents of quality deterioration in intermediate moisture meats : An appraisal. *Meat Sci.* 4(2); 1980; 79-88

Discusses : lipid oxidation; formation of lipid-protein complexes; non-enzymic browning (NEB) reactions; antioxidation by non-enzymic browning intermediates; colour and flavour changes in intermediate moisture meats (IMM) and changes in protein quality of IMM. BSN

1679 PARIZA (MW), ASHOOR (SH) and CHU (FS). Mutagens in heat-processed meat, bakery and cereal products. *Food Cosmet. Toxicol.* 17(4); 1979; 429-30

1680 RHODES (DN) and NUTE (GR). Acceptability of canned ham of differing water content. *J. Sci. Food Agric.* 31(9); 1980; 935-42

Polyphosphate added upto 0.8% had no effect on flavour and that scores for tenderness and juiciness increased with increasing water content. When canned pasturised hams containing up to 27% added water was served to panelists,

they identified increases in tenderness and juiciness but neither had much effect upon the average acceptability of the food. KAR

1681 STILES (ME) and NG (LK). Fate of pathogens inoculated onto vacuum-packaged sliced hams to simulate contamination during packaging. *J. Food Prot.* 42(6); 1979; 464-9

1682 TOMPKIN (RB), CHRISTIANSEN (LN) and SHAPARIS (AB). Antibotulinal efficacy of sulphur dioxide in meat. *Appl. Environ. Microbiol.* 39(6); 1980; 1096-9
Significant inhibitory effect (100 botulinal spores/g) of botulism caused by *Clostridium botulinum* could be observed in canned comminuted pork stored at 25 C when the product had earlier been fortified with not less than 100 µg/g of sulphur dioxide. BSN

BEEF

1683 BOUTON (PE), FORD (AL), HARRIS (PV) and SHAW (FD). Electrical stimulation of beef sides. *Meat Sci.* 4(2); 1980; 145-55

1684 CURRIE (RW) and WOLFE (FH). Rigor related changes in mechanical properties (tensile and adhesive) and extracellular space in beef muscle. *Meat Sci.* 4(2); 1980; 123-43

1685 EMSWILER (BS) and KOTULA (AW). Bacteriological quality of ground beef prepared from hot and chilled beef carcasses. *J. Food Prot.* 42(7); 1979; 561-2
There was no significant difference in the bacteriological quality of ground beef club packs made from hot-boned (2 h post-mortem) carcass halves, and from cold-boned (chilled for 24 h and 3 C) carcass halves. Ground beef prepared from hot boned beef offers great potential to the meat industry for energy conservation. KMD

1686 MACKEY (BM), ROBERTS (TA), MANSFIELD (J) and FARKAS (G). Growth of *Salmonella* on chilled meat. *J. Hyg.* 85(1); 1980; 115-24
Growth rates of a mixture of *Salmonella* serotypes inoculated on beef from a commercial abattoir were measured at chill temperatures. The minimum recorded mean generation times were 8.1 h at 10 C; 5.2 h at 12.5 C and 2.9 h at 15 C. Growth did not occur at 7-8 C. From these data the maximum extent of growth of *Salmonella* during storage of meat for different times at chill temperatures was calculated. Criteria for deciding safe handling temperatures for meat are discussed. Maintaining an internal temperature below 10 C during the boning operation would be sufficient to safeguard public health requirements. AA

COW

1687 SMITH (GC), SEIDEMAN (SC) and CARPENTER (ZL). Blade tenderization effects on cooking and palatability characteristics of steaks from bullock and cow carcasses. *J. Food Prot.* 42(7); 1979; 563-6
Blade tenderization of bullock muscles resulted in steaks which required less time to cook, had less of organoleptically detectable connective tissue and had increased tenderness, flavour and overall palatability ratings. Blade tenderization of cow muscles had little or no effect on cooking characteristics, tenderness, flavour, or overall palatability of muscles from the round, but increased tenderness and overall palatability of the *Longissimus dorsi* muscle. Blade tenderization, though it will improve tenderness, will not improve the

product enough to make beef of unsatisfactory quality comparable to that from high quality beef. KMD

SHEEP

1688 ATTREY (DP), RADHAKRISHNA (K) and SHARMA (TR). A reappraisal of methods of determination of total nucleotides in sheep postmortem muscle. *J. Food Sci. Technol. (India).* 18(1); 1981; 18-9

UV measurement of total nucleotides in postmortem muscles is an efficient and quick method to follow the breakdown of adenine nucleotides. Absorbance may be read at 250, 260 and 265 nm taking millimolar extinction of adenine and inosine nucleotides at 250 nm. For calculating total adenine and inosine nucleotides in muscle samples the absorbance ratio of 265/250 appears to be most suitable. KAR

PORK

1689 FORTIN (A). The effect of slaughter weight on the carcass characteristics of Yorkshire barrows and gilts. *Can. J. Anim. Sci.* 60(2); 1980; 265-74

1690 FREDEEN (HT). Pig breeding: Current programs vs. future production requirements. *Can. J. Anim. Sci.* 60(2); 1980; 241-51

1691 LOPEZ-LORENZO (P), HERNANDEZ (P), SANZ-PEREZ (B) and ORDONEZ (JA). Effect of oxygen and carbon dioxide-enriched atmospheres on shelf-life extension of refrigerated ground pork. *Meat Sci.* 4(2); 1980; 89-94

With elevated oxygen levels (80-100%), myoglobin oxidation in ground pork meat decreased while 50% metmyoglobin formation time was increased from four to thirteen days. Lipid oxidation rate was significantly reduced in the presence of 20% CO_2, thereby extending the time to reach TBA number of 5 from five to twelve days. Citric acid did not act as efficient inhibitor of lipid oxidation, while tocopherol and ascorbic acids acted as inhibitors. BSN

RABBIT

1692 OWEN (JE), ISON (RW), NICOLAIDES (L), REILLY (A) and SILVERSIDE (D). Curing and smoking of rabbit meat. *Trop. Sci.* 21(1); 1979; 11-31

Rabbit meat was processed by both cold and hot rolling and also smoking. Although the hot curing method produced lower yields after processing, it produced meat that appeared to be of a higher organoleptic quality than the cold cured meat. Bacterial numbers were not high on the meat after curing and were virtually eliminated by smoking. No food poisoning organisms were isolated. Thus, an acceptable product (for the urban markets of developing countries) could be obtained by hot curing of pre-rigor rabbit carcasses, without the need for refrigeration in the processing stages. KMD

CHICKEN

1693 YOSHIZAWA (T), SWANSON (SP) and MIROCHA (CJ). T-2 metabolites in the excreta of broiler chickens administered ^{3}H-labeled T-2 toxin. *Appl. Environ. Microbiol.* 39(6); 1980; 1172-7

TURKEY

1694 TO (EC) and ROBACH (MC). Inhibition of potential food poisoning microorganisms by sorbic acid in cooked, uncured, vacuum packaged turkey products. *J. Food Technol.* 15(5); 1980; 543-7

Vacuum packaged, oven-roasted turkey breasts and sliced turkey breast luncheon meat were prepared with and without potassium sorbate or sorbic acid. Control and treated products were inoculated with one of the following organisms: *Salmonella*, *Staphylococcus aureus*, or enteropathogenic *Escherichia coli*. The samples were vacuum packed and stored at 15 C for 10 days. The addition of 0.25% sorbate to the breasts and 0.12% sorbic acid in the slices provided excellent protection against the growth of *Salmonella*, *E. coli*, and *S. aureus* in uncured, cooked, vacuum packaged turkey. AA

EGG

1695 BERGQUIST (DH). Sanitary processing of egg products. *J. Food Prot.* 42(7); 1979; 591-5

1696 EASWARAN (KRK), RAJU (KS) and MAHADEVAN (S). High resolution nuclear magnetic resonance studies of hen's egg yolk plasma lipoproteins. *J. Biosci.* 2(1); 1980; 1-13

1697 PARRY (AEJ), ROBINSON (DS) and WEDZICHA (BL). An enzymic assay for β-hydroxybutyric acid in liquid whole egg. *J. Sci. Food Agric.* 31(9); 1980; 905-10

The assay based on using the enzyme D-β-hydroxybutyric dehydrogenase measures the reduced adenine dinucleotide formed during the conversion of D-β-hydroxybutyric acid to acetoacetic acid; the limit of reliable detection being estimated as 20 μmol litre^{-1} for this method. KAR

1698 PEARSON (AW), BUTLER (EJ) and FENWICK (GR). Rapeseed meal and egg taint : The role of sinapine. *J. Sci. Food Agric.* 31(9); 1980; 898-904

Neither the administration of sinapine bisulphate in the diet, nor the repeated intramuscular or intravenous injection of large doses of this substance, reduced the ability of chicks or laying hens to oxidise trimethylamine (TMA). It was concluded that sinapine acts only as a source of TMA in the consequent production of egg taint. KAR

SEAFOODS

1699 ANON. Towards building up a strong export base. *Seafood Exp. J.* 12(11); 1980; 7-8

1700 YOUNG (RH) and ROMERO (JM). Variation in the yield and composition of by-catch recovered from Gulf of California shrimping vessels. *Trop. Sci.* 21(4); 1979; 249-64

Shrimping vessels in the Gulf of California catch 6-15 times as much of other fish (by-catch) than of shrimp. The average yield of by-catch is 60 kg/hr. Out of the total of 87 species identified, 9 species make up 65% of the catch. The size of the fish ranges from 6-65 cm, but the vast majority is found to be in the range of 7-13 cm. This small size precludes normal marketing, because of the problem of evisceration. Nevertheless, the development of deboned, minced products could have some commercial potential, and merits further attention. KMD

FISH

1701 CHANDRAMOHAN (K). Conservation techniques in fisheries management: A review. *Seafood Exp. J.* 12(11); 1980; 9-12

1702 JOSEPH (KG) and MURALEEDHARAN (V). Indian fish curing industry-present status and some suggestions for improvement. *Seafood Exp. J.* 12(12); 1980; 15-8

The author has reviewed some of the traditional methods of fish curing that are being followed in India; Indian Standard Specifications for dried fishery products published during the last 17 years have been given. KMD

1703 LUNDSTROM (RC). Fish species identification by thin layer polyacrylamide gel isoelectric focussing: Collaborative study. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 69-73

BALTIC HERRING

1704 KOSSUROK (B), DURR (F) and SCHOBER (B). Activity of proteolytic enzymes of the Baltic sea herring as a function of fishing date and storage conditions. *Lebensmittel-Industrie.* 27(3); 1980; 111-6 (German)

The activity of proteolytic enzymes in various tissues of herrings that were spawning in the South Baltic sea during spring was measured. The proteolytic activity in muscle flesh with a pH value of 4.0 was only very slightly dependent on the date of catching; muscle flesh with a pH of 6.5 and the pyloric appendix with a pH of 6.5 and 9.0 had a proteolytic activity that was more dependent on date of catching. Freezing and frozen storage inactivated the proteases of the pyloric appendix to some extent; the greatest reduction in activity was observed immediately after freezing and also with the first two months of frozen storage. The activity of the muscle proteases is only slightly reduced under the same storage conditions. KMD

CHISAWASAWA

1705 MEYNELL (PJ). Effect of pre-freezing handling procedures on the quality of chisawasawa (*Lethrinops* and *Haplochromis* spp.) from Lake Malawi. *Trop.Sci.* 21(4): 1979; 85-96

The effects of different, pre-freezing handling procedures on the quality of frozen chisawasawa fish from Lake Malawi have been studied both in the hot and cool seasons (mean temperatures 25 and 20 C resp.). The use of ice on board the trawlers can maintain the quality for more than 4 days in the cool season, whilst uniced fish become unacceptable within 24 h. after capture. In the hot season, uniced fish become unacceptable 6-8 h after capture. Bacterial spoilage is more important than autolytic degradation in the cool season and vice-versa in the hot season. The upper limits of acceptability for fresh and frozen chisawasawa have proposed as follows : 10^6 bacteria-sq. cm of skin, 10^5 bacteria/g. of flesh, and total volatile bases amounting to 25 mg N/100 of flesh. KMD

CROAKER

1706 LIN (TS) and LANIER (TC). Properties of an alkaline protease from the skeletal muscle of Atlantic croaker. *J. Food Biochem.* 4(1); 1980; 17-28

PEARLSPOT

1707 JAYAPRAKAS (V). Culture possibilities of pearlspot (*Etroplus suratensis*) in Kerala. *Seafood Exp. J.* 12(11); 1980; 13-5

PROTEIN FOODS

Nil

FRUIT JUICES AND BEVERAGES

APPLE

1708 TANNOUS (RI) and LAWN (AK). Effects of freeze-concentration on chemical and sensory qualities of apple juice. *J. Food Sci. Technol. (India).* 18(1); 1981; 27-9

Effects of freeze concentration, clarification, and ascorbic acid enrichment on chemical, physical and sensory qualities of apple juice from 2 varieties (Golden Delicious and Starking) of apple were investigated. While freeze concentration of apple juice increased to 5-fold (12 to 60 Brix), the acid content increased only 3-4 folds. On reconstituting the concentration back to original strength the acid content was less than the fresh juice. Ascorbic acid was completely lost during freeze concentation. Addition of ascorbic acid at 60 mg/100 ml of juice before clarification helped in the retention of ascorbic acid in freeze concentration and reconstituted juice to the extent of 14-23% depending upon variety and type of juice i.e. clarified or unclarified. Sensory tests showed that addition of ascorbic acid improved colour and flavour of reconstituted apple juice; however the preference was for clarified apple juice. KAR

COCOA

1709 BIRCH (GG) and OGUNMOYELA (G). Taste properties of cocoa drinks with an added bitter/sweet sugar: Intensity/time effects. *J. Food Technol.* 15(5); 1980; 549-55

Cocoa drinks treated with either sucrose or the bitter/sweet sugar, methyl α-D-mannopyranoside were evaluated for their intensity/time response determined by taste panellists using a moving chart recorder. Both additives caused an increase in persistence as well as intensity of response, sucrose for sweetness and methyl α-D-mannopyranoside for bitterness. Tasting of the sucrose-treated drinks, after presaturating panellists' tongues with quinine sulphate solutions, caused no significant differences in perceived sweetness. However, presaturating panellists' tongues with sucrose solution did cause significant differences in bitterness perception of the drinks containing methyl α-D-mannopyranoside. These results accord with a previous observation of the taste response to methyl α-D-mannopyranoside in pure water and suggest that the bitter/sweet molecule may exert its effect by simultaneously spanning both basic tas receptors. AA

1710 KUMARAN (K), SIVARAMAN NAIR (PC) and VIKRAMAN NAIR (R). Studies on the methods of curing for small quantities of cocoa beans. *Indian Cocoa Arec. Spices. J.* 4(2); 1980; 42-4

3 methods of fermentation (i) mini basket-bamboo baskets of 15 cm diam. and 15 cm and 25 cm height to hold 1.5 and 3.0 kg of wet cocoa beans respectively, (ii) mini wooden boxes with open top and holes on all sides of 0.5 cm diameter and covered on the inside with one layer of banana leaf with a small weight on the top to accommodate 1.5 and 3.0 kg wet cocoa beans respectively and (iii) two mini trays with bottom provided with wooden rapers of 1.5 cm width with capacity of 1.5 and 3.0 kg wet beans respectively of wet. Cocoa beans in batches of 1.5 and 3.0 kg were tried. The fermentation period was 4 days for (iii) and 6 days for (i) and (ii). Extra insulation was provided from the second day onwards by fully covering them with jute (gunny) sacks. Results have shown that fermentation for 6 days in (i) and (ii) with turning over of beans on alternate days gave a satisfactory product. (ii) and (iii) were better than (i) for temperature retention and aeration. Cut test (mean % of brown beans values ranged from 41 to 49% in (i) and (ii) as against 23-24% in (iii) and as such (i) and (ii) gave better quality cocoa beans. BSN

COFFEE

1711 ANON. ABC of Coffee : Coffee terms. *Indian Coffee.* 44(12); 1980; 265

Definitions of the following coffee terms are given: Off taste, Over ripe taste, Oily taste, Out turn. KMD

1712 ANON. ABC of Coffee : Coffee terms. *Indian Coffee.* 45(1); 1981; 3

Definitions of the following coffee terms are given: Parchment coffee, Polished coffee, Pulp, Parchment, Peaberry, Partly blackbean, Pulper-Nipped bean, Pulping, Peeling, Pales, Plantation Coffee, Pulper, Pungent. KMD

1713 ANON. ABC of Coffee : Coffee terms. *Indian Coffee.* 45(2); 1981; 31

Definitions of the following coffee terms are given: Quakers, Quakery, Rake, Rat Parchment, Ragged, Rust red, Roasted coffee, Roasting, Rio flavour, Rancid, Rioy, Robusta, Rubbery. KMD

TEA

1714 CLOUGHLEY (JB). The effect of fermentation temperature on the quality parameters and price evaluation of Central African black teas. *J. Sci. Food Agric.* 31(9); 1980; 911-9

Tea was fermented at 15, 25 and 35 C and otherwise manufactured according to commercial practice on several occasions in early May and mid-November 1977. Fermentation at 15 C resulted in teas containing greater amounts of the desirable theaflavin class of pigments. Teas produced at the higher temperatures contained more of the thearubigin pigments, including the polymeric fraction known as the non-dialysable material. Colour development was also more rapid at 25 and 35 C. Teas produced at the low temperature were accorded higher evaluation and a linear relationship between evaluation and theaflavin content was established which explained 70% of the variation in value data. It is suggested that, since the price premium for quality is high and the market stable, the installation of temperature control equipment to regulate the production of oxidation products would improve the quality of the product and benefit Central African tea industry. AA

1715 CLOUGHLEY (JB). The effect of temperature on enzyme activity during the fermentation phase of black tea manufacture. *J. Sci. Food Agric.* 31(9); 1980; 920-3

Activities of both polyphenoloxidase and peroxidase enzymes declined as a function of fermentation time, the magnitude of the effect on the former being much greater. The effect of temperature on the rate of inactivation was also much greater on polyphenoloxidase. AA

1716 CLOUGHLEY (JB) and ELLIS (RT). The effect of pH modification during fermentation on the quality parameters of Central African black teas. *J. Sci. Food Agric.* 31(9); 1980; 924-34

Adjusting the pH of fermenting tea from the physiological value to within the range 4.5-4.8 resulted in an increase in theaflavin content, a reduction in thearubigin levels, and an increase in the organoleptic evaluation of the product. Industrial-scale acidification of commercial leaf was practicable and the market price realised on the London auction floors for treated teas was considerably higher than that for control consignments. AA

WINE

1717 DADIC (M), JORIS (EA), VAN GHELUWE and WEAVER (RL). Thin layer densitometric determination of gallic acid and gallotannins in wine and cider. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 1-4

1718 KUNDU (BS), BARDIYA (MC), DHAMIJA (SS) and TAURO (P). Effect of fungitoxicants on grape must fermentation and wine yeast growth. *J. Food Sci. Technol. (India).* 18(1); 1980; 20-2

6 fungitoxicants ((i) Difolotan (ii) Bavistin, (iii) Calixin (iv) Sclex (v) Dithane M-45, and (vi) Miltox) were sprayed on the standing crop of Beauty Seedless variety grapes 40 days before harvest and their effect on yeast growth, must fermentation and must composition of red table wines was investigated in 1975 and 1976. Only (i) prolonged the must fermentation time. The gross chemical composition and organoleptic quality of wines did not change by the use of fungitoxicants. All the fungitoxicants affected the growth of wine yeast *in vitro* at a concentration higher than 10 p.p.m. (concentration tried 0.1-100 p.p.m.) but (i) was 10 times more toxic compared to others. It is concluded that (ii) - (iv) could be sprayed safely on grapes provided their residual concentration is 10 p.p.m. KAR

LIQUOR

1719 ANON. Liquor with a twist, a twist of lemon, apple, grapefruit. *Food Eng. Int.* 5(5); 1980; 28-9

1720 HOLM (KA). Automated colorimetric determination of acid proteinase activity in fermentation samples using a trinitrobenzenesulphonic acid reagent. *Analyst.* 105(1246); 1980; 18-24

1721 PIENDL (A) and GEIGER (E). Technological factors in the formation of esters during fermentation. *Brew. Dig.* 55(5); 1980; 26-35

1722 SINHA (SK). Vegetable oil as a source of raw material for chemical industry in India. *Chem. Age India.* 31(10); 1980; 1051-64

PALM OIL

1723 WONG (KH), FUNG (YS) and FUNG (KW). Determination of trace amounts of copper in palm oil by differential-pulse anodic-stripping voltammetry. *Analyst.* 105 (1246); 1980; 30-6

The differential-pulse anodic-stripping voltametry technique enables few grams only of dry ash samples to be used for determination of copper in palm oil. The relative standard deviation is about 3% for oils with copper content less than 100 ppb. BSN

1724 ANON. Joint (German-French-Italian) Symposium on 'Lipid Science', Vienna, 24-28 Sept. 1979. *Fette Seifen Anstrichm.* 81(11 & 12); 1979; 423-36, 477-91

Abstracts of 148 papers have been communicated under the following headings:

A. Holasek : Proteins of blood serum which are associated with lipids (p.423).
B. Entressangles: Influence of food fatty acids on the properties of biological membranes (p.423)
E. Schweizer : Regulation of fatty acid synthetase in yeasts (p.424)
C. Cantarelli : Substitute protein foods : perspectives of an Italian national research program (p. 424).
Sunflower - 11 papers (p. 424-6)
Soyabeans - 9 papers (p. 426-8)
Other oil -bearing plants - 6 papers (p. 428-9)
Biological and clinical Chemistry of lipids - 10 papers (p. 429-31)
New Results of Lipo-Protein Research - 11 papers (p. 431-2)
Lipid - containing cosmetics and pharmaceutica for external use - 13 papers (p. 433-4)
Lipids of the skin surface - 7 papers (p. 435-6)
Fundamental Research and Analysis - 31 papers (p. 477-83)
Fats as Food - 14 papers (p.483-6)
Wax and Wax Products - 3 papers (p.486)
Processing Technology, Machines and Apparatus - 9 papers (p.486-7)
Ecology, Environment Protection and Work Safety - 4 papers (p.488)
Water Treatment as required by law - 3 papers (p.488-9)
Proteins from Fatty Raw materials - 7 papers (p.489-90)
Fats and Oilseeds as Feeds, Feed Technology - 6 papers (p. 490-1) KMD

1725 FLOR (RV) and PRAGER (MJ). Lipid extraction procedure for some food products containing surfactants. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 22-6

Certain products, e.g. flavoured powered milk, breakfast food variety, do not allow ready extraction of all the fat present. Hence a chloroform-methanol mixture (70:30) was used, in the ratio of 6.67 ml solvent/g sample to extract total lipids from food products, by heating the sample under reflux for 15 h. The solution was filtered and evaporated and the lipids were dissolved in petroleum ether, filtered and evaporated, to yield the crude lipids and surfactants. The purified lipids are suitable for butter fat determination directly, or are readily separated from the surfactants by alumina chromatography. The method also allows ready extraction of total fats from drained feta cheeses, whereas Soxhlet extraction with petroleum ether sometimes fails. The effects of reflux time and varying ratios of chloroform to methanol were studied. KMD

1726 HILL (P), REDDY (BS) and WYNDER (EL). Effect of unsaturated fats and cholesterol on serum and fecal lipids. *J. Am. Diet. Assoc.* 75(4); 1979; 414-20

1727 NEY (KH). Bitterness of lipids. *Fette Seifen Anstrichm.* 81(12); 1979; 467-9

We have been able to demonstrate, that the hydrophobicity of the amino acid side chains is responsible for the bitterness of a peptide. Now we investigated lipids (and carbohydrates) in the following classes : Monoglycerides, diglycerides, phosphatides, lysophosphatides, monohydroxy fatty acids, dihydroxy fatty acids, trihydroxy fatty acids, monosaccharides, disaccharides. It was found that for lipids and carbohydrates the ratio from the number of the C-atoms of a molecule to the number of the hydroxyl groups

$$\frac{n_C}{n_{OH}} = R$$

called the R-values, gave a good indication as to whether the lipid or carbohydrate was sweet, bitter or non-bitter. For sweet compounds we found R = 1.00 - 1.99, for bitter compounds we found R = 2.00-6.99, and for non-bitter compounds we found a value of R higher than 7.00. These results confirm our earlier assumption, that like in the case of peptides, the bitterness of lipids and carbohydrates is caused by a certain range of the hydrophobicity. AA

1728 PRECHT (Von D). Polymorphism and crystallization processes in fat mixtures when changing from the melting to the solid phase. *Fette Seifen Anstrichm.* 81(12); 1979; 457-63 (German)

SPICES AND CONDIMENTS

1729 GREENHALGH (P). Economic background to the exploitation of plant resources with particular reference to spices and culinary herbs. *Trop. Sci.* 21(3); 1979; 217-20

1730 ZAIKA (LL) and KISSINGER (JC). Effects of some spices on acid production by starter cultures. *J. Food Prot.* 42(7); 1979; 572-6

Ginger, red pepper, mustard, mace, cinnamon and clove were examined to determine their effects on growth of and acid production by a starter culture containing *Lactobacillus plantarum* and *Pediococcus cerevisiae* in a liquid medium. At 4,8 and 12 g/l levels all spices except clove stimulated acid production by the starter bacteria but did not stimulate increases in bacterial population. Clove was inhibitory to the starter bacteria at and above the 4g/l level, but low concentrations (0.5-2.0 g/l) stimulated acid production. High concentrations of cinnamon (8 and 12 g/l) delayed acid production, but bacterial counts were similar to those of the control. AA

TAMARIND

1731 JALEEL (SA), NARAYANA (K), SREEKANTIAH (KR) and RAMANATHAN (PK). Use of fungal pectic enzyme in the production of tamarind concentrate. *Indian Food Packer* 34(5); 1980; 12-3

Tamarind pulp (*Tamarindus indica* L.) was treated with (a) 0.5, (b) 1.0, (c) 1.5 and (d) 2.0%) levels of Pectic enzyme concentrate (PEC) to get a clear juicy product which on concentration would yield an acceptable, nonviscous and free flowing concentrate. Data obtained with 5 kg pulp showed that yield increased from 2.51 to 2.57 kg with increase in levels of PEC, while the pH and Brix remained at 2.6 and 3.0 with all levels of PEC. Acidity was 2.54,

2.54, 2.70, 2.70 and 2.74 with (a), (b), (c) and (d). Dispersal of pulp in hot water (40 C) gave better extraction and the enzyme activity was complete in 6 hour. BSN

GINGER

1732 RAINA (BL), TEOTIA (MS) and PRUTHI (JS). Technological assessment of the quality of ginger grown in Himachal Pradesh. *Indian Cocoa Arec. Spices. J.* 4(2); 1980; 32-5

8 varieties of ginger grown in Himachal Pradesh (India) were dried in sliced as well as whole form, using a cross-flow drier at (i) 60 C and (ii) at 65 C - 60 C - 55 C (phased dehydration) and sun-drying, using tray-loading of 10 kg/sq.m. and 15.6 kg/sq.m. respectively. Sliced ginger took 5 hour for drying while peeled and unpeeled rhizome took 22-24 hour in (i) and (ii) did not perceptibly reduce the drying time. Sun-drying took 8-12 days. Drying ratio ranged from 5.9:1 to 6.7:1 depending upon the initial moisture content. The dried samples and fresh market samples of ginger were assessed for various physico-chemical properties. The essential oil recovery ranged from 1.68 to 2.25% (v/v), while oleoresin content varied from 4.83 to 6.51%. Himachal Pradesh ginger is slightly inferior to Kerala ginger in essential oil and oleoresin content; but it is superior to those from other hilly regions in oleoresin content. BSN

PEPPER

1733 SHANTHI NARASIMHAN and RAJALAKSHMI (D). Piperine and related compounds. II. Estimation of pungency stimuli and correlation with pungency in pepper. *J. Food Sci. Technol. (India).* 13(1); 1981; 11-6

The sources of variation in the official UV spectrophotometric method for estimation of pungency stimuli of pepper extracts is examinedin relation to the known properties of piperine and related compounds. These inlcude no significant difference in the magnitude of reduction of absorption between solvents used for dilution-benzene and ethanol were observed. 1% solution of piperine in ethanol or in benzene is stable in diffused light upto 23 days, and after 34 days there is 7-8% loss in absorption (maximum exposure period tried was 96 days). It was also noted that the reduction in 342 nm absorption is different from pungency reduction. For 10-13% reduction in 342 nm the pungency gets reduced to 40-50%. Errors may also occur from sampling method and due to the content of piperitine and possibly pyrroperine. A straight line relationship (r = 0.997) was observed between pungency (Scoville units) and UV estimated pure piperine content. A standardized method is given for preparing the sample and determining the piperine content by UV method. KAR

SENSORY EVALUATION

1734 ARNDT. Colloquium "Rheology and texture of foodstuffs". *Lebensmittel-Industrie.* 27(3); 1980; 134-6 (German)

A report on the proceedings of the colloquium has been presented which contains summaries of 17 papers. KMD

FOOD STORAGE

1735 DHANRAJ (KS). Better grain storage for the farmer. *Indian Farming.* 30(6); 1980; 24-7

Causes of loss of grain due to insects, fungi, mites and rodents, storage engineering and storage management are the other aspects covered. KAR

INFESTATION CONTROL AND PESTICIDES

1736 ANON. Tolerances for residues of agricultural chemicals in Japan (expressed ppm). *Jpn. Pestic. Inf.* No. 36; 1979; 62-83

Data on residues (ppm) of agricultural chemicals of Arsenic, lead, DDT, BHC, endrin, Dieldrin (including Aldrine, parathion, EPN, malathion, dimethoate, dichlorovos Phenthion, fenitrothion, diazinon, carbaryl, chlorbenzilate, dicofol, tricyclohexyl tinchloride, bromide captan, captatol, chlorpyriphos and phosalon)' in several foods including cereals, fruits, vegetables and tea have been presented. BSN

1737 BHAT (PP) and GILL (KS). Oogenesis of egg in *Tribolium castaneum.* *Indian J. Ani. Sci.* 50(4); 1980; 362-70

1738 BROWER (JH). Reduction of almond moth/populations in simulated storages by the release of genetically incompatible males. *J. Econ. Entomol.* 73(3); 1980; 415-8

1739 BOYD (WG) Jr. Gas-liquid chromatographic method for determining bolstar insecticide in formulations: Collaborative study. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 120-7

1740 CAYLEY (GR) and LORD (KA). The extraction and assay of thiabendazole in strongly adsorbing oils. *Pestic. Sci.* 11(1); 1980; 9-14

1741 GARG (HO), SOVARAN SINGH and VARMA (BK). Studies on losses in foodgrains in threshing yards due to birds and rodents around Hapur. *Bull. Grain Technol.* 17(3); 1979; 216-21

A study carried out in 1977 and 1978 in 26 threshing yards around Hapur, India, showed that among the birds, sparrows were in much large numbers and losses due to rodents and birds was 0.314% in wheat, 0.036% in paddy and 0.053% in maize/day/threshing yard. BSN

1742 KEATING (MI). Gas-liquid chromatographic determination of dioxathion and quintiofos in organophosphorus dip washes. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 33-6

1743 MEINEN (VJ). Gas-liquid chromatographic determination of N-octylbicycloheptene dicarboximide. Collaborative study. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 128-30

1744 MOORE (RF). Dispenser of laboratory diet into multiple rearing containers. *J. Econ. Entomol.* 73(3); 1980; 366-8

1745 NORSTROM (RJ), WON (HT), VAN HOVE HOLDRINET (M), CALWAY (PG) and NAFTEL (CD). Gas-liquid chromatographic determination of mirex and photomirex in the presence of polychlorinated biphenyls: Inter laboratory study. *J. Assoc. Off. Anal.*

Chem. 63(1); 1980; 37-42

1746 OKUNO (I) and MEEKER (DL). Gas-liquid chromatographic determination of sodium fluoroacetate (Compound 1080). *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 49-55

1747 SAKAI (M). Modes of action of insecticides developed in Japan. *Jpn. Pestic. Inf.* No. 34; 1978; 5-13

Discusses : insect neurophysiology; organophosphates (fenitrothion; salithion; prophaos; substituted phenyl); substituted phenyl N-methyl carbo mates; mode of entry into insect body; poisoning of nervous system; mechanism of carbamate resistance in the green rice leafhopper; pyrethroids and cartap. BSN

1748 TING (K-C), ROOT (GA) and TICHELAAR (GR). Gas-liquid chromatographic determination of bromacil residues. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 43-6

1749 ZEHNER (JM), SIMONAITIS (RA) and BRY (RE). High performance liquid chromatographic determination of bendiocarb on wool. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 47-8

BIOCHEMISTRY AND NUTRITION

1750 ANDERS (M) and ANGELRATH (Th). Methodological problems in the improvement of research on nutritional requirements. *Lebensmittel-Industrie.* 27(3); 1980; 97-101 (German)

Starting with the premise that the methods of socialistic planning and market research (i.e. research on needs or requirements) have been proved to be valid, the author have pointed out the need for a multi-stage model for the food and nutrition complex. An essential pre-requisite for such a model is the fixation of economically founded nett consumption norms, synthesised from other norms that are based on nutritional science, and dependent on production and requirement (or consumption). KMD

1751 CARMEL (J) and MUSANTE (G). Structured eating: A predictor of weight loss at follow up. *Ecol. Food Nutr.* 9(2); 1980; 87-91

1752 KNAPP (A). Nutrition in a Hesse village 50 years ago. *Ernahrungsforschung.* 24(2); 1979; 61-3 (German)

1753 OMAWALE. Nutrition problem identification and development policy implications *Ecol. Food Nutr.* 9(2); 1980; 113-21

1754 REINHOLD (JG), ABADI (P), FARAJI (B), ISMAIL-BEIGI (F) and RUSSELL (RM). Depletion of calcium, magnesium, zinc and phosphorus associated with consumption by humans of whole meal wheaten bread rich in fiber and phytate. *Baroda J. Nutr.* 7; 1980; 55-62

A diet based on unleavened bread made of lightly milled wheat flour and rich in phytate and fiber was fed to three male adults for 14 days. This was followed by feeding diets based on equivalent amounts of white bread low in phytate and fiber. The intake and output of Ca, Mg, Zn and P and fiber were measured during each feeding period. With the high fiber diet (34 g), the amount of fibre broken down varied from 0 to 2/3rd. Though the intakes of all minerals were greater with unleavened bread than with white bread, the change over to white bread resulted in improved balances in Ca, Zn and Mg. This was attributed to adverse effects of fiber on absorption of divalent cations. MVG

1755 SCHILLING (D) and ULRICH (K-H). On the inter-relationships between the development of community feeding and food consumption in the house hold. *Ernahrungsforschung.* 24(2); 1979; 52-5

1756 SEN GUPTA (PN). Food consumption and nutrition of regional tribes of India. *Ecol. Food Nutr.* 9(2); 1980; 93-108

1757 SPAHN (U), KNOLL (G), HESSE (V), PETRICH (E) and PLENERT (W). Increase in weight and metabolic behaviour of obese subjects in childhood. *Ernahrungsforschung.* 24(2); 1979; 42-5 (German)

1758 UMOH (IB), AYALOGU (EO) and BASSIR (O). Evaluation of the nutritive value of some lesser known protein sources in Nigerian peasant diets. *Ecol. Food Nutr.* 9(2); 1980; 81-6

Nigerian peasant diets were evaluated for their nutritive values by *in vitro* and *in vivo* digestion studies with rats. Snail, periwinkle, dried crayfish and smoked fresh water fish had a range of digestibility of 57-75% with pepsin/trypsin hydrolysis. Digestibility of smoked fish and crayfish rats ranged between 91.2% and 89.5% while periwinkle and snail was 80.4% and 85.9%. Highest PER (1.8) was observed in crayfish while other had PER from 0.7-1.5 (whole hen's egg (3.5). These protein samples had high B.V. (70.8-81.6) which were lower than whole hen's egg (92.0). BSN

1759 WOLINSKY (I), LINEBACK (DR), McCARTHY (RD) and SEVERSON (G). Iodination of salt. *Baroda J. Nutr.* 7; 1980; 1-6

The review deals with need for iodine-fortification of salt as a preventive measure against endemic goiter in India, various iodination techniques currently available, and possible future work in this aspects. MVG

TOXICOLOGY AND HYGIENE

1760 BEUCHAT (LR). Comparison of *anti-vibrio* activities of potassium sorbate, sodium benzoate and glycerol and sucrose esters of fatty acids. *Appl. Environ. Microbiol.* 39(6); 1980; 1178-82

1761 BUSTA (FF). Food protection for the 80's. *J. Food Prot.* 42(7); 1979; 596-8

1762 GOLBERG (L). Modern times - in toxicology. *Food Cosmet. Toxicol.* 17(4); 1979; 427-8

1763 ANON. The detection of metal contamination in food products. *Environ. Health.* 88(6); 1980; 118-21

Discusses : genesis of the problem; development, equipment, rejected products; installation; checking; performance specifications for a metal detector in the food industry; and phase discrimination and product effect compensation. BSN

1764 MITCHAM (RP). Determination of lead in drinking water by atomic-absorption spectrophotometry using an electrically heated graphite furnace and an ammonium tetramethylenedithiocarbamate extraction technique. *Analyst.* 105(1246); 1980; 43-7

1765 KORUNOVA (V) and DEDINA (J). Determination of trace concentrations of mercury in biological materials after digestion under pressure in nitric acid catalysed by vanadium pentoxide. *Analyst.* 105(1246); 1980; 48-51

1766 ANTAL (M), BEDO (M), CONSTANTINOVITS (G), NAGY (K) and SZEPVOLGYI (J). Studies on the interaction of methomyl and ethanol in rats. *Food Cosmet. Toxicol.* 17(4); 1979; 333-8

1767 KAVLOCK (R), CHERNOFF (N), CARVER (B) and KOPFLER (F). Teratology studies in mice exposed to municipal drinking-water concentrates during organogenesis. *Food Cosmet. Toxicol.* 17(4); 1979; 343-7

It was concluded that the organic impurities present in a wide sample of municipal drinking-waters possess very little capacity for inducing foetotoxicity in the mouse. AA

1768 LINTAS (C), DE MATTHAEIS (MC) and MERLI (F). Determination of benzo(a)-pyrene in smoked, cooked and toasted food products. *Food Cosmet. Toxicol.* 17(4); 1979; 325-8

Samples of smoked, cooked and toasted food products, commercially available in Italy, and some samples of oils and fats were analysed for benzo(a) pyrene. In the commercial samples, benzo(a)pyrene was detected in approximately 73% of the samples, at levels ranging from 0.01 to 9.51 µg/kg. In electrically-broiled foods, the benzo(a)pyrene content ranged from 0 to 0.05 µg/kg. Levels of benzo(a)pyrene in the food products analysed were lower than levels reported by other investigators for comparable food commodities. AA

1769 COKER (RD). Aflatoxin: Past, present and future. *Trop. Sci.* 21(3); 1979; 143-62

This review had been designed as an introduction to the various aspects of the aflatoxin problem. The topics discussed include, susceptible commodities, the acute and chronic activities of the aflatoxins the natural occurrence of aflatoxicosis and the metabolic fate of the aflatoxins. Various approaches to the reduction of the aflatoxin problem are also mentioned including sampling and analysis together with detoxification procedures. Areas of work which need to be explored in the future are briefly discussed. AA

1770 GRANUM (PE) and WHITAKER (JR). Improved method for purification of enterotoxin from *Clostridium perfringens* type A. *Appl. Environ. Microbiol.* 39(6); 1980; 1120-2

1771 MALLIKA (M) and DHAR (SC). Studies on the oxidation of tannins by *Aspergillus flavus*. *J. Biosci.* 2(1); 1980; 43-8

1772 NOLETO (AL) and BERGDOLL (MS). Staphylococcal enterotoxin production in the presence of non-enterotoxigenic staphylococci. *Appl. Environ. Microbiol.* 39(6); 1980; 1167-71

1773 DAVIS (ND), DICKENS (JW), FREIE (RL), HAMILTON (PB), SHOTWELL (OL) and WYLLIE (TD). Protocols for surveys, sampling, post-collection, handling and analysis of grain samples involved in mycotoxin problems. *J. Assoc. Off. Anal. Chem.* 63(1); 1980; 95-102

1774 HUNT (DC), McCONNIE (BR) and CROSBY (NT). Confirmation of ochratoxin A by chemical derivatisation and high-performance liquid chromatography. *Analyst.* 105(1246); 1980; 89-90

1775 NORTHOLT (MD), VAN EGMOND (HP) and PAULSCH (WE). Ochratoxin A production by some fungal species in relation to water activity and temperature. *J. Food Prot.* 42(6); 1979; 485-90

1776 GEHLERT (G). Some nutritional hygiene considerations regarding the problem of quality in community feeding. *Ernahrungsforschung.* 24(2); 1979; 47-9 (German)

1777 MARTIN (CRA). "New" food borne infections. *Br. Food J.* 83(900); 1981; 6-8
Discusses : *Bacillus cereus*: infant botulims; compylobacter enteritis; infective hepatitis; and uses. BSN

1778 WYATT (CJ). Concerns, experiences, attitudes and practices of food market managers regarding sanitation and safe-food handling procedures. *J. Food Prot.* 42(7); 1979; 555-60

1779 MOSSEL (DAA), EELDERINK (I), KOOPMANS (M) and VAN ROSSEM (F). Influence of carbon source, bile salts and incubation temperature on recovery of Enterobacteriaceae from food using MacConkey-type agars. *J. Food Prot.* 42(6); 1979; 470-5

1780 NORTHOLT (MD), VAN EGMOND (HP) and PAULSCH (WE). Penicillic acid production by some fungal species in relation to water activity and temperature. *J. Food Prot.* 42(6); 1979; 476-84

1781 LAHIRI (DK) and BURMA (DP). Immunoprecipitation of 70s, 50s and 30s ribosomes of *Escherichia coli*. *J. Biosci.* 2(1); 1980; 55-61

1782 PUBLIC HEALTH LABORATORY SERVICE AND THE STANDING COMMITTEE OF ANALYSTS (Joint Committee of -). A comparison between minerals-modified glutamate medium and lauryl tryptose lactose broth for the enumeration of *Escherichia coli* and coliform organisms in water by the multiple tube method. *J. Hyg.* 85(1); 1980; 35-49

It was concluded that for the detection of *E. coli* in raw waters lauryl tryptose lactose broth was better than minerals-modified glutamate medium at 18-24 hour, but the latter was better at 48 hour with water containing small numbers of coliform organisms, for raw waters with greater number of organisms, both media performed equally well. KAR

1783 PUBLIC HEALTH LABORATORY SERVICE AND THE STANDING COMMITTEE OF ANALYSTS (Joint Committee of -). Single tube confirmatory tests for *Escherichia coli*. *J. Hyg.* 85(1); 1980; 51-7

Lauryl tryptose mannitol broth (LTMB) and minerals - modified glutamate medium with added tryptophan (MMGM+T) gave similar gas and indole results with about 90% of the water samples in most of the laboratories. The difference in the rate false positive reactions between LTMB and MMGM+T was insignificant. It was concluded that lauryl sulphate is a suitable inhibitory surfactant for use in single tube media for the confirmation of *E. coli*. KAR

1784 GARG (SK), BANERJEA (AC) and VERMA (J). The role of intestinal *Clostridia* and the effect of asafoetida (Hing) and alcohol in flatulence. *Indian J. Microbiol.* 20(3); 1980; 194-7

The pattern of hourly gas production from chickpea and its reduction from chickpea and dried pea pastes inoculated with 5 strains of intestinal *clostridia* with and without asafoetida and alcohol is studied. The gas production started 10 hour of inoculation of the pastes with *Clostridia* and continued upto 24

hour. The maximum amount was observed at 20 hour (substrate chickpea). A considerable reduction in gas production *in vitro* was noted when the two substrates inoculated with *Clostridia* were mixed with different concentration of asafoetida and alcohol. BSN

1785 HARVEY (RWS) and PRICE (TH). *Salmonella* isolation with Rappaport's medium after pre-enrichment in buffered peptone water using a series of inoculum ratios. *J. Hyg.* 85(1); 1980; 125-8

An attempt has been made to determine an optimum inoculum ratio from buffered peptone water pre-enrichment. Optimum results were obtained with the inoculum ratio (the ratio of the volume of inoculum to the volume of fluid medium into which it is introduced) of 1:2000 although the *Salmonella* isolation rate was only slightly less with the 1:500 and 1:100 ratios. A graduated loop is used. KAR

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